

STATE OF FLORIDA

FY2020 SECTION 319(h) GRANT WORK PLAN



Submitted September 2019

**Florida Department of Environmental Protection (Department)
Division of Water Restoration Assistance (DWRA)
Nonpoint Source Management Program (NPS)
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Table of Contents

INTRODUCTION TO FLORIDA’S FY2020 SECTION 319(h) WORKPLAN	3
PROGRAM PROJECTS.....	7
WATERSHED PROGRAM PROJECTS	8
Outputs for all Local Grantee Recipients (Project #s: 3, 5-9).....	8
Outcomes for all Local Grantee Recipients (Project #s: 3, 5-9)	8
TABLE 1. FY20 Grant Funding Request, Project Selection- Program Projects.....	9
TABLE 2. FY20 Grant Funding Request, Project Selection -Watershed	9
FLORIDA’S FY2020 SECTION 319(h) Workplan	
PROJECT 1.....	11
PROJECT NAME: NPS/Watershed Program Administration	
PROJECT 2.....	14
PROJECT NAME: Bioassessment Development and Quality Assurance	
PROJECT 3.....	16
PROJECT NAME: Sweetwater Branch Road Sediment Reduction Project.....	
PROJECT 4.....	21
PROJECT NAME: Continued Expansion and Sustainability of the Florida-Friendly Landscaping™ Program to Protect Water Quality From Stormwater Runoff and Nonpoint Souce Pollution.....	
PROJECT 5.....	26
PROJECT NAME: Convair Cove Stormwater LID & Living Shoreline	
PROJECT 6.....	31
PROJECT NAME: Bayou Chico Stormwater Retrofit Project Phase II	
PROJECT 7.....	36
PROJECT NAME: Pine Lake Preserve Re-Hydration.....	
PROJECT 8.....	40
PROJECT NAME: Ripple Stormwater Water Quality Retrofit, Phase II	
PROJECT 9.....	44
PROJECT NAME: McCarty Ranch Water Quality, Restoration and Storage Project – Area 4.....	
PROJECT 10.....	48
PROJECT NAME: FDEP Education Project	
PROJECT 11.....	50
PROJECT NAME: Landscaping for Watershed Protection Pilot Project.....	
PROJECT 12.....	54
PROJECT NAME: Seminole County Waterway Protection – Fertilizer Education for Retail Stores and Applicators.....	
PROJECT 13.....	58
Project FLOW: Future Leaders of Water Quality; Enhancing Local Water Quality Through Environmental Stewardship.....	

INTRODUCTION TO FLORIDA'S FY2020 SECTION 319(h) WORKPLAN

This FY2020 Section 319(h) Draft Work Plan consists of 12 projects that were selected for Section 319 grant funding. In the fall of 2018 and spring of 2019, grant solicitation packages were sent out statewide and placed upon the Department's website. Department staff reviewed and evaluated the 41 proposals submitted. Projects were prioritized for grant funding using the Project Evaluation Criteria included in the grant solicitation package. The selected projects were then presented to the DWRA's senior managers for final funding approval.

The selected projects contribute to the implementation of the Department's NPS Management Plan. There are two Department program projects and one project with a local government entity under the Program Funding category.

- The two Department program projects are the NPS, Total Maximum Daily Load (TMDL) and Basin Management Action Plan (BMAP) Administration activities and the bioassessment program. Section 1 of the NPS Management Plan describes the TMDL and BMAP watershed assessment and restoration processes, Section 2 of the NPS Management Plan describes the NPS Grant and Funding Administrative activities and Section 10 of the Plan describes the bioassessment program activities.
- Program Funding will be assigned to a sediment reduction through stabilization project.

There are 10 projects with other government entities, local and state level, under the Watershed funding category. All of the watershed projects address nonpoint source pollution in priority BMAP areas identified in the 2015 NPS Management Plan.

- Four of the workplan projects are targeted at reducing nutrients from urban stormwater which is identified in the Plan as a high priority for the Department.
- There is one agriculture BMP project under the Watershed funding category.
- There are four education projects targeted at specific nonpoint source pollution issues in their respective areas.

The specific references on how the projects are linked to the NPS Management Plan are provided in Table 1.

NATIONAL WATER QUALITY INITIATIVE

The Department continues to work with the National Resource Conservation Service (NRCS) on the National Water Quality Initiative (NWQI). There are currently three watersheds identified for the NWQI funding. Two are in the northeast part of the state, Deep Creek and Clarks Creek, and one is in the panhandle, Little Scurlock Creek. Monitoring is currently ongoing at a farm in the Clarks Creek area. The Department is not requesting funding at this time for the NWQI but DEP staff coordinates with NRCS on the NWQI watershed selection and monitoring activities.

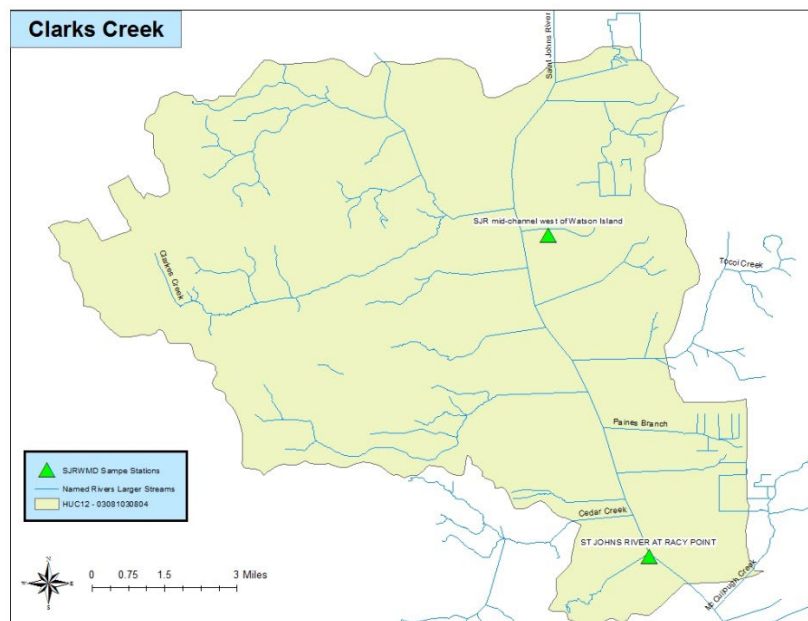
The Department is coordinating with the St. Johns River Water Management District to obtain water quality data in the Clarks Creek and Deep Creek Watersheds. Department staff is conducting the monitoring activities in the Little Scurlock Creek area. A summary of the ongoing monitoring activities is below.

The St. Johns River Water Management District monitors water quality in the Clarks Creek Watershed. Two locations are monitored monthly for the analytes in the table below.

Analysis Type	Parameters
Field Measurements	Dissolved Oxygen; pH; Salinity; Sample Depth; Secchi Depth; Specific Conductivity; Temperature
Water Quality Analysis	Alkalinity, Aluminum, Ammonia, Antimony, Arsenic, Barium, BOD-5 day, Cadmium, Calcium, Chloride, Chlorophyll-a, Chromium 3, Chromium III, Color, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrite-Nitrate (NO ₂ NO ₃), Pheophytin-a, Phosphorus, Potassium, Selenium, Silver, Sodium, Sulfate, Thallium, Total Kjeldahl Nitrogen, Total Organic Carbon, Total Silicon, Total Suspended Solids, Turbidity, Un-ionized Ammonia, Volatile Solids Suspended In Mixed Liquid, Zinc

Station ID	Station Name	Latitude	Longitude	Start Sample Date	*Last Sample Date
21FLSJWMSJWSIL	SJR mid-channel west of Watson Island	29.895	-81.594722	1997	Current
21FLSJWMSRP	ST JOHNS RIVER AT RACY POINT	29.798889	-81.564444	1997	Current

*The last sample date where data is available.

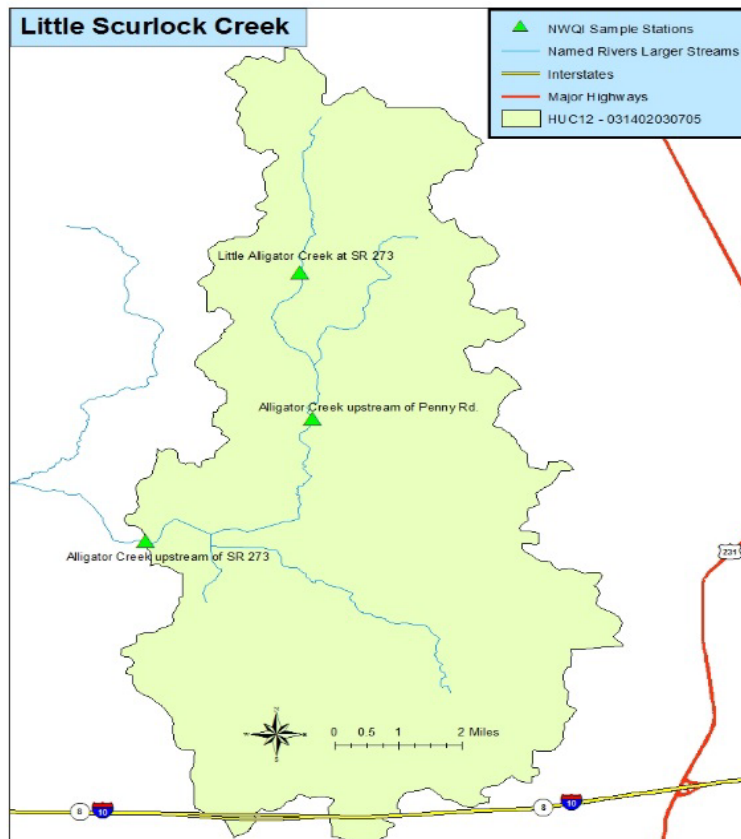


The Department's NWQI coordinator met with NRCS and the Department's sampling staff at the Little Scurlock site to develop a sampling plan for that area. The Florida Department of Environmental Protection is collecting water quality samples quarterly from three locations in the Little Scurlock Creek (also known as Alligator Creek) watershed for NWQI. Bioassessments will be collected twice from one station as part of Florida's 303(d) assessment monitoring. The analytes being monitored are listed in the table below.

Analysis Type	Parameters
Field Measurements	Dissolved Oxygen; pH; Salinity; Sample Depth; Secchi Depth; Specific Conductivity; Temperature
Water Quality Analysis	Alkalinity; Ammonia (NH ₄); BOD-5 day; Chloride; Chlorophyll-a (Corrected); Color (True); Fluoride; Nitrite-Nitrate (NO ₂ NO ₃); Orthophosphate-filtered; Pheophytin-a; Sulfate; Total Dissolved Solids; Total Kjeldahl Nitrogen; Total Organic Carbon; Total Phosphorus; Total Suspended Solids; Turbidity
Bioassessments	Rapid Periphyton Survey, Linear Vegetation Survey

Station ID	Station Name	Latitude	Longitude	Start Sample Date	*Last Sample Date
G3WA0003	Alligator Creek upstream of Penny Rd.	30.8517	-85.4653	2015	2016
G3WA0005	Alligator Creek upstream of SR 273	30.819	-85.5042	2015	2016
G3WA0006	Little Alligator Creek at SR 273	30.88873	-85.46802	2015	2016

*The last sample date where data is available.

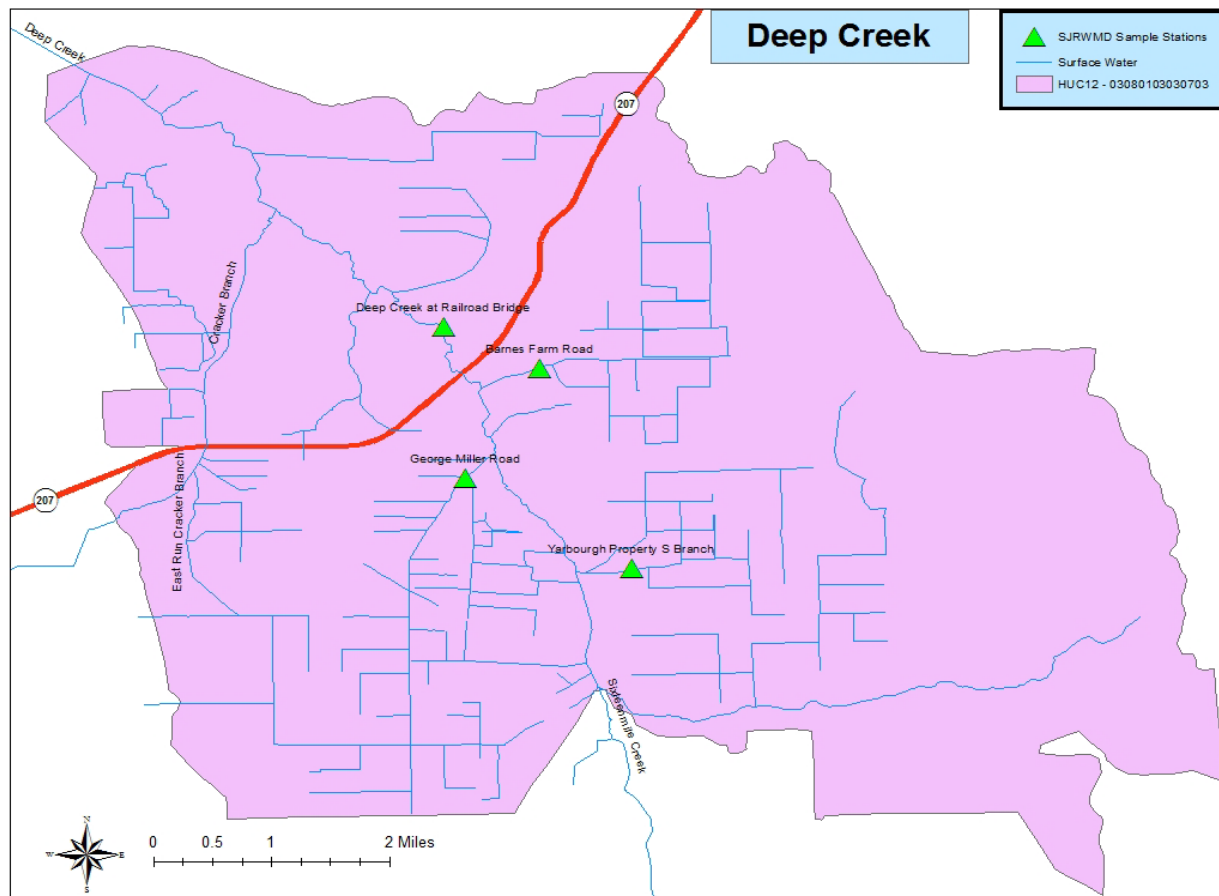


The St. Johns River Water Management District monitors water quality in the Deep Creek watershed. Four locations are monitored monthly for the analytes in the table below.

Analysis Type	Parameters
Field Measurements	Dissolved Oxygen; pH; Salinity; Sample Depth; Secchi Depth; Specific Conductivity; Temperature
Water Quality Analysis	Alkalinity, Aluminum, Ammonia, Antimony, Arsenic, Barium, BOD-5 day, Cadmium, Calcium, Chloride, Chlorophyll-a, Chromium 3, Chromium III, Color, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrite-Nitrate (NO ₂ NO ₃), Pheophytin-a, Phosphorus, Potassium, Selenium, Silver, Sodium, Sulfate, Thallium, Total Kjeldahl Nitrogen, Total Organic Carbon, Total Silicon, Total Suspended Solids, Turbidity, Un-ionized Ammonia, Volatile Solids Suspended In Mixed Liquid, Zinc

Station ID	Station Name	Latitude	Longitude	Start Sample Date	*Last Sample Date
21FLSJWM3F05YARS	Yarborough Property S Branch	29.6988	-81.463836	1997	current
21FLSJWM3F07GMR	George Miller Road	29.710275	-81.484294	1997	current
21FLSJWM3F08BFR	Barnes Farm Road	29.724206	-81.475208	1997	current
21FLSJWMDPB	Deep Creek at Railroad Bridge	29.729575	-81.486978	1997	current

*The last sample date where data is available.



PROGRAM PROJECTS

Over the past 25+ years, the state has implemented a wide variety of nonpoint source management programs involving numerous state agencies, the water management districts, and local governments. These programs include non-regulatory and regulatory components, technical assistance, education, technology transfer, extensive interagency coordination and monitoring. The programs include both surface water and groundwater elements.

The Department's FY2020 program undertakes projects that will increase the environmental effectiveness of our NPS programs, expand our knowledge about the potential effects of various nonpoint sources on ground and surface waters, and expand our knowledge about the effectiveness of Best Management Practices (BMPs) in protecting ground and surface waters.

The projects described in this section of the Work Plan for program funding provide for:

- Administration of the program and management of selected sub-grantee projects;
- Development and Implementation of TMDLs and BMAPs;
- Improvement to the state's surface water NPS bioassessment program;

Project 1, NPS/Watershed Program Administration. Support of the Nonpoint Source Management Section includes managing the restoration contracts associated with the program and watershed funding, overseeing the NWQI program, and additional tasks such as updating the EPA Grants Reporting Tracking System. This funding provides support for staff, travel, and other expenses that are otherwise unavailable. In addition, the Division of Environmental Assistance and Restoration (DEAR) staff coordinates with state, regional, and local governmental agencies, local watershed groups, and nongovernmental organizations and other interested stakeholders to develop and implement Total Maximum Daily Loads, Basin Management Action Plans, and Reasonable Assurance Plans (9-Element Watershed Plans). This project addresses activities identified in Section 1 and 2 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Project 2, Bioassessment Program. The responsibility for monitoring the condition of Florida's surface and ground water resources lies with the Department and its restoration partners, including the Water Management Districts (WMDs) and local governments. The Department has developed biological monitoring tools and associated quality assurance (QA) for more than 25 years. The Department currently uses the Stream Condition Index (SCI), Habitat Assessment (HA), Lake Vegetation Index (LVI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) to determine biological impairment due to nonpoint source pollution of nutrients, sediment, metals, and other pollutants. These biological assessment methods are included in Florida's Water Quality Standards and Impaired Waters Rules (62-302 and 62-303, Florida Administrative Code). This project is designed to increase our ability to monitor and assess the effects of NPS pollutants, the effectiveness of BMPs, and the effectiveness of the NPS management program. This project addresses activities identified in Section 10 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Project 3, Sweetwater Branch Road Sediment Reduction Project. The purpose of this project is to improve water quality of Sweetwater Creek-upper branch of Econfinia Creek, St Andrews Bay System by eliminating the source of sedimentation and reducing nitrification of Sweetwater Creek through stabilization of the dirt road with pervious open grade asphalt pavement and installation of

adequate roadside drainage system. Econfina Creek Watershed is a primary source of drinking water for Bay County. This project addresses activities identified in Section 1 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

WATERSHED PROGRAM PROJECTS

The remaining ten projects selected for funding will meet a variety of urban, education and agricultural related stormwater needs. All these selected projects implement Best Management Practices (BMP) in Basin Management Action Plans (BMAPs) or Reasonable Assurance Plans (RAPs) and are identified as Watershed projects. Additionally, these projects all meet the goals set out in the NPS Management Plan for NPS Management Program 2015 Program Update. More detailed scopes for the selected projects are included later in this document.

Outputs for all Local Grantee Recipients (Project #s: 3, 5-9)

Output: Final Report

Final Reports include the following information:

- Project location and background, project description and timeline, grant award amount and anticipated benefits.
- Financial summary of actual costs versus the budget, along with any changes required to the budget. Include any match provided, along with other related project work performed outside of this Agreement to identify the overall project cost.
- Discussion of project schedule versus actual completion, including changes required to the schedule, unexpected site conditions and adjustments, significant unexpected delays and corrections, and/or other significant deviations from the original project plan.
- Summary of activities completed as well as those not completed and why, as well as a brief summary of any additional phases yet to be completed.
- Dated color photo documentation of work performed (representative of the entire project), appropriate figures (site location, site plan(s), etc.), appropriate tables summarizing data/information relevant to Grant Work Plan tasks, and appropriate attachments relevant to the project.
- Discussion of whether the anticipated benefits have been/will be realized (e.g., why a BMP did or did not exceed the expected removal efficiency)
- Summary of monitoring activities completed and any not completed and why, monitoring results, and an interpretation of data based on planned versus realized results
- Documented environmental results
- Description of any partnerships related to the project

Outcomes for all Local Grantee Recipients (Project #s: 3, 5-9)

Outcomes include expected environmental results (load reductions and other water quality improvement information), partnerships, and any general BMAP and/or RAP information. Details on outcomes are included in the project information.

TABLE 1. FY20 Grant Funding Request, Project Selection- Program Projects

Project	Type/Mgmt Plan location	Title	Lead Agency	Watershed	FY20 319 Funding	FY20 319 Match Funds
1	Watershed Admin, Mgmt Plan pg. 17/Appendix 1.0; NPS Admin, Mgmt Plan pg. 31/ Appendix 2.0	NPS/Watershed Program Administration	FL DEP	Statewide	\$1,816,148	\$1,078,867
2	Urban, Mgmt Plan pg. 112/ Appendix 10.0	Bioassessment	FL DEP	Statewide	\$165,673	\$177,183
3	Other/Water Quality, Plan Pg 25/ Appendix I 3.1	Sweetwater Branch Road Sediment Reduction Project	Bay County	Choctawha tchee – St. Andrew	\$894,756	\$1,342,136
TOTAL PROGRAM					\$2,876,557	\$2,598,186

TABLE 2. FY20 Grant Funding Request, Project Selection -Watershed

Project	Type/Mgmt Plan location	Title	Lead Agency	Watershed	FY20 319 Funding	FY20 319 Match Funds
4	Urban, Mgmt Plan Pg. 40/ Appendix I, 3.1	FL Friendly Yards and Landscaping	University of Florida	Statewide	\$279,463	\$1,179,956
5	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.2	Convair Cove Stormwater LID	Cocoa Beach	IRL, Banana River Lagoon	\$292,598	\$163,902
6	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.0	Bayou Chico Stormwater Retrofit Project Phase II	Escambia County	Bayou Chico	\$660,000	\$440,000
7	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.0	Pine Lake Preserve Re-Hydration	Bonita Springs	Everglades West Coast	\$580,000	\$370,000
8	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.0	Ripple Stormwater Water Quality Retrofit, Phase II	Martin County	St Lucie- Loxahatchee	\$315,285	\$97,000
9	Other/Water Quality/Ag Mngmt Plan Pg 74/ Appendix I, 6.0	McCarty Ranch Water Quality, Restoration and Storage Project – Area 4	Port St. Lucie	St. Lucie - Loxahatchee	\$718,950	\$578,635

10	Education/ Mgmt Plan Pgs. 40, Appendix I, 3.1, 8.1	FDEP Education Project	FDEP	BMAP Areas	\$208,283	\$144,452
11	Education/ Mgmt Plan Pgs. 40, Appendix I, 3.1	Landscaping for Watershed Protection Pilot Project	Pinellas County	Springs Coast	\$25,000	\$35,000
12	Education/ Mgmt Plan Pgs. 40, Appendix I, 3.1	Seminole County Waterway Protection-Fertilizer Education for Retail Stores and Applicators	Seminole County	Middle St. Johns	\$90,000	\$60,000
13	Education/ Mgmt Plan Pgs. 40, Appendix I, 3.1	Project FLOW: Future Leaders of Water Quality	Florida Gulf Coast University	Everglades West Coast	\$72,715	\$49,603
Watershed Total					\$3,242,294	\$3,118,548
FY 20 Total Grant Request					\$6,118,871	\$5,638,735

Summary		
	Grant	Match
Total Salary/Personnel	\$967,650	\$587,825
Total Fringe	\$648,961	\$416,004
Total Travel	\$20,000	\$0
Total Indirect	\$345,210	\$192,222
Total Other	\$4,137,050	\$4,460,684
Total Grant Request	\$6,118,871	\$5,716,734
Total Match Required (40%)		\$4,079,248
Total Match from State/Projects		\$5,716,734
Match Percentage		48%
Program Total	\$2,876,577	\$2,598,186
Watershed Total	\$3,242,294	\$3,118,548
Program Percentage	47%	
Watershed Percentage	53%	

FLORIDA'S FY2020 SECTION 319(h) Workplan

PROJECT 1

PROJECT NAME: NPS/Watershed Program Administration

PROJECT FUNDING: \$1,816,148

MATCH: \$1,078,867

LEAD ORGANIZATION: Florida Department of Environmental Protection

PROJECT ABSTRACT: Florida's NPS Management Program identifies the natural resource management programs, strategies, and resources that currently are in place or that are needed to minimize or prevent nonpoint source pollution effects. The NPS Management Program identifies BMPs to control pollution from specific sources of nonpoint source pollution (e.g., agriculture, forestry, OSTDS, urban); identifies programs to assure implementation of programs, activities, and structural and nonstructural BMPs that will minimize or reduce NPS pollution; and coordinates restoration activities with other state and local entities, especially those leading to restoration of impaired waters. Section 319 grant financial support allows the NPS Management Program staff to properly administer the grant, to assure that all projects are properly completed, and to enhance the effectiveness of the state NPS/watershed management program.

In addition, the Division of Environmental Assistance and Restoration (DEAR) staff coordinates with state, regional, and local governmental agencies, local watershed groups, and nongovernmental organizations, and other interested stakeholders to develop and implement TMDLs and assists with development of the state's Best Management Practice manuals. BMAPs are developed collaboratively with local stakeholders and are designed to identify management actions and schedules to meet the pollutant load reductions required by adopted TMDLs. Section 319 grant financial support allows the DEAR staff to develop and implement TMDLs and BMAPs.

PROJECT DESCRIPTION: The funds will pay the salaries of 1) a Program Administrator to oversee management of the NPS program; 2) seven full-time and one OPS NPS Environmental Specialists to manage selected projects; 3) one Deputy Director of DEAR to oversee management of the assessment, TMDL, and BMAP programs; 4) one Program Administrator to oversee management of the water quality restoration program (including BMAP development); 5) three Environmental Consultants to develop and implement BMAPs; and 6) one Program Administrator and one Environmental Consultant to develop and implement TMDLs. Requested funding also covers travel expenses of Department NPS staff to meet with project sub-grantees on-site to ensure accountability of project funding, and provide site-specific nonpoint source expertise, to travel to EPA Nonpoint Source Workshops, and to provide for travel needed in order to assist in the development and implementation of TMDLs.

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GOALS:

Goal: Successfully manage the 319 grant program.
(a) Action: Reduce the unliquidated obligations (ULOs) by utilizing leftover funds, emphasizing the five-year time frame in the proposal and selection process and evaluating the project contracting process.
(b) Action: Evaluate and update the NPS Management Plan on an ongoing basis and at least every five years.
(c) Action: Maintain 319 project data in the GRTS system.
Goal: Develop a centralized system to track all NPS restoration projects managed by the NPS Program or geared toward BMAP implementation.
(a) Action: Evaluate systems for suitability
Goal: Administer an effective NPS management program.
(a) Action: Provide technical expertise on issues relating to NPS management through meetings and inter- and intra-agency cooperation.
(b) Action: Provide educational materials and training on NPS management.
Goal: Develop TMDLs for verified impaired waterbodies.
(a) Action: Prioritize the waterbodies for TMDL development utilizing appropriate tools such as the EPA Recovery Potential Screening tool.
(b) Action: Develop TMDLs for waterbodies based on priority listing
Goal: Develop and implement BMAPs to implement TMDLs and restore water quality.
(a) Action: Prioritize watersheds for BMAP development utilizing the EPA Recovery Potential Screening tool.
(b) Action: Work with local and regional stakeholders to develop BMAPs for adoption.
(c) Action: Support projects that are targeted at implementation of BMAPs.
Goal: Restore impaired waters that are not part of a BMAP.
(a) Action: Support local entities in the development of RA plans, Nutrient Management Plans, or other water quality restoration plans for waterbodies that are impaired but are not slated for BMAP development.
(b) Action: Support projects geared toward the restoration of impaired waters that are not part of a BMAP.

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PROJECT BUDGET – GRANT FUNDING

Admin Project Funding Activity	319 (h) Salary	Fringe (70.77%)	Indirect (42.18% and 31.27%)
1 Program Administrator NPS	\$63,000	\$44,585	\$26,573
7 Environmental Specialist NPS	\$310,500	\$219,741	\$130,969
1 OPS Environmental Specialist NPS	\$42,000	\$0	\$17,716
OPS Health	\$8,000	\$0	\$0
OPS FICA (1.45%)	\$650	\$0	\$0
1 Deputy Director DEAR (TMDL & BMAP)	\$105,000	\$74,309	\$32,834
1 Program Administrator BMAP	\$74,000	\$52,370	\$23,140
3 Environmental Consultant BMAP	\$159,500	\$112,878	\$49,876
1 Program Administrator TMDL	\$74,000	\$52,370	\$23,140
1 Environmental Consultant TMDL	\$49,000	\$34,677	\$15,322
Totals:	\$885,650	\$590,930	\$319,569
Travel (NPS)	\$20,000		
GRAND TOTAL:	\$1,816,148		

*NPS Indirect rate is 42.18% and TMDL & BMAP Indirect rate is 31.27%.

MATCH FUNDED POSITIONS:

Program Match Positions	Match Salary	Fringe (70.77%)	Indirect (42.18% and 31.27%)*
1/4 Director DEAR	\$30,250	\$21,408	\$9,459
1/4 Budget Director DEAR	\$14,000	\$9,908	\$4,378
3 Environmental Consultant BMAP	\$145,000	\$102,617	\$45,342
1/4 Director DWRA	\$28,750	\$20,346	\$12,127
1/4 Staff Director DWRA	\$21,825	\$15,446	\$9,206
1/4 Budget Director DWRA	\$19,000	\$13,446	\$8,014
1/4 Admin. Assistant DWRA	\$7,500	\$5,308	\$3,164
3 Environmental Consultant TMDL	\$139,500	\$98,724	\$43,622
3 Environmental Specialist III TMDL	\$124,000	\$87,755	\$38,775
Total:	\$529,825	\$374,957	\$174,085
GRAND TOTAL:	\$1,078,867		

*NPS Indirect rate is 42.18% and TMDL & BMAP Indirect rate is 31.27%.

PROJECT 2

PROJECT NAME: Bioassessment Development and Quality Assurance

PROJECT FUNDING REQUEST: \$165,673

MATCH COMMITMENT: \$117,183

TOTAL PROJECT COST: \$282,856

LEAD ORGANIZATION: Florida Department of Environmental Protection, Aquatic Ecology QA Section

CONTACT INFORMATION:

Name: Nijole (Nia) Wellendorf
Street Address: 2600 Blair Stone Rd., MS 6511
City, State, Zip: Tallahassee, FL 32399
Tel: (850) 245-8190
Email: nijole.wellendorf@dep.state.fl.us

Geographic Location (city and county): Statewide

PROJECT OVERVIEW:

The Florida Department of Environmental Protection (department) has a mature bioassessment program that has developed biological monitoring tools and associated quality assurance (QA) for more than 25 years. The department currently uses the Stream Condition Index (SCI), Habitat Assessment (HA), Lake Vegetation Index (LVI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) to determine biological impairment due to nonpoint source pollution of nutrients, sediment, metals, and other pollutants. These biological assessment methods are included in Florida's Water Quality Standards and Impaired Waters Rules (62-302 and 62-303, Florida Administrative Code), and therefore numerous entities outside of the department are using these methods as well. A rigorous quality assurance component to this program is essential for accurate and scientifically defensible decision-making with bioassessment data. The requested funding would support quality assurance activities, including accurate metric calculations for external parties, and further tool development for the department's bioassessment activities.

Training is an essential element of the bioassessment program, including field sampling method training for new employees and training for all staff on new tools and approaches to be used in conjunction with bioassessment methods. Some of the requested funds would be used to cover travel costs associated with staff attendance at bioassessment sampling training (as trainers and trainees) and the annual Biocriteria meeting. The Biocriteria meeting also serves as a means of educating other private and public entities throughout the state on use of the department's biological assessment methods.

One of the QA components for the department's SCI, LVI, and LVS assessments is taxonomic verification by subject matter experts outside the department for specimens with unknown identification or those specimens to be included in reference collections.

Project evaluation elements include number of staff within and outside of the Department who are trained annually on Bioassessment sampling methods, number of participants in Biocriteria meetings, and assessment decisions made with the support of bioassessment data.

PROJECT GOALS:

Goal: Evaluate waterbodies for NPS pollution through a bioassessment program.
(a) Action: Improve integration of existing bioassessment tools into statewide monitoring and assessment programs as well as water resource programs.
(b) Action: Continue to provide technical support staff to the statewide bioassessment program to both implement and expand sampling programs and manage the flow of statewide data collection, analysis, and reporting to program managers and the public.

Project evaluation elements include number of staff within and outside of the Department who are trained annually on bioassessment sampling methods, number of participants in Biocriteria meetings, and assessment decisions made with the support of bioassessment data.

PROJECT FUNDING and TIMELINE:

Admin Project Funding Activity	319(h) Salary	Fringe (70.77%)	Indirect (31.27%)
2 Environmental Specialist II	\$82,000	\$58,031	\$25,641
Total:	\$82,000	\$58,031	\$25,641
GRAND TOTAL:	\$165,673		

Program Match Positions	Match Salary	Fringe (70.77%)	Indirect (31.27%)
1 Environmental Administrator	\$58,000	\$41,047	\$18,137
Total:	\$58,000	\$41,047	\$18,137
GRAND TOTAL:	\$117,183		

Total Number of Months for the Project: 36

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PROJECT 3

PROJECT NAME: Sweetwater Branch Road Sediment Reduction Project

PROJECT TYPE: Other (Sediment Reduction Project)

PROJECT FUNDING REQUEST: \$894,756

MATCH COMMITMENT: \$1,342,136

TOTAL PROJECT COST: \$2,236,892

LEAD ORGANIZATION: Bay County Board of County Commissioners

CONTACT INFORMATION:

Name: Natasha Lithway, P.E.
Street Address: Bay County Engineering Division, 840 West 11th Street
City, State, Zip: Panama City, Florida 32401
Tel: 850-248-8301
Fax: 850-248-8343
Email: nlithway@baycountyfl.gov

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

Geographic Location, City and County (include street address if available): Panama City, Florida, Bay County

Size of Project Impact (area needed to build project): 20.80 acres

Size of Area Being Treated: 20.80 acres

Latitude (decimal degrees): 85.426894

Longitude (decimal degrees): 30.527843

Name of Impaired Waterbody Affected: N/A

Waterbody ID of Impaired Waterbody Affected (WBID): N/A

TMDL Status and Name, if Applicable: No TMDL listed

TMDL Impairment; indicate the parameters in the TMDL, if applicable: No TMDL listed

Impairments To Be Addressed by Project: Total Suspended Solids (TSS), Total Phosphorus (TP), Total Nitrogen (TN)

Does this project fall within the boundaries of a developing or adopted basin management action plan (BMAP) or within an adopted reasonable assurance plan (RAP)? No developed BMAP in the project area.

Are the activities in this project required under a permit or does it implement permit application requirements (e.g., municipal separate storm sewer system [MS4], National Pollutant Discharge Elimination System [NPDES])?

No

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LAND USE:

Land Use	Acres	%
Transportation, Communication, and Utilities (8000)	20.80	100
Land Use Totals (Acreage and %)	20.80	100

PROJECT OVERVIEW

The purpose of this project is to improve water quality of Sweetwater Creek- upper branch of Econfinia Creek, St Andrews Bay System by eliminating the source of sedimentation and reducing nitrification of Sweetwater Creek through stabilization of the dirt road with pervious open grade asphalt pavement and installation of adequate roadside drainage system. Econfinia Creek Watershed is a primary source of drinking water for Bay County.

Task 1- Data Collection will include surveying, geotechnical evaluations, and ecological survey. Surveying will include horizontal and vertical control, utilities, and topographic features. Geotechnical analysis will determine the existing soil conditions, seasonal high water table and pavement design.

Task 2- Engineering Design and Plans Preparation will include a broad range of innovative methods to best stabilize the roads and provide roadside drainage. These methods will include installation of road base, road crowning, vegetated shoulders, establishment of adequate roadside drainage systems with appropriate stabilization and installation of a new stream crossing structures. Additionally, innovative methods for stormwater control will be employed to include rip rap rubble and filtering water with vegetation. Detailed construction plans will be prepared by in house engineering staff with Ms. Natasha Lithway, P.E. designated as a project manager.

Task 3- Permitting will be required for this project through The Northwest Florida Water Management District (NFWMD) and the United States Army Corps of Engineering (ACOE). This project will be permitted as a dirt road paving exemption. The ACOE permit will address any wetland impacts falling under jurisdiction of the ACOE. No local permits will be needed for this project.

Task 4- Bidding will be performed through the County's Purchasing Department in accordance with Florida Statutes and the County's Procurement Code. A pre-bid meeting will be held for potential contractors and contractor initiated requests for information during the bidding phase will be addressed. The submitted bids will be reviewed and the lowest responsible bidder will be recommended to the County Commissioners for award.

Task 5- Construction will be completed by a qualified firm working with approved subcontractors. The construction contract will required the contractor to obtain NPDES construction activity permit for the construction phase of the project. Construction management and construction inspection will be performed by in-house inspectors.

Task 6- Monitoring will be performed for one year after construction completion to ensure that the improvement performs as designed and that no roadway erosion occurs.

Bay County will provide public education information about the project and its environmental benefits through public workshops, project information posted on county's website and installation of project informational sign in the vicinity of the project.

Objective:

The primary objective of this project is to improve water quality of Sweetwater Creek- upper branch of Econfinia Creek, St Andrews Bay System by eliminating sedimentation through the dirt road stabilization and roadside drainage systems installation. Econfinia Creek Watershed is a primary source of drinking water for Bay County. Econfinia Creek is largely spring fed watershed which includes Pitt, Sylvan and Williford springs. The creek flows into Deer Point Lake Reservoir, which supplies Bay County's drinking water. Water discharged from the Deer Point Lake Reservoir also provides freshwater flows to North Bay, which is critical for maintaining the bay's natural estuarine character. Econfinia Creek is a significant water resource and contains a wealth of biological diversity.

Few activities cause more long term damage to water quality and ecosystems than construction and maintenance of roads. Across the landscape, the effects of road building and maintenance have dramatically altered the form and function of ecosystems. The adverse effects of dirt roads on water quality and habitats are well documented. The interface of unpaved roads and streams create runoff conditions that frequently result in erosion of road prism materials and right of way soils that are conveyed directly to receiving streams and bayous as sediment. Stream and bayou sedimentation reduces the quality and availability of aquatic habitats, impairs water quality, increases flooding, impairs navigations and recreation, and alters alluvial and fluvial geomorphology.

The St. Andrews Bay system is one of the most biologically diverse estuarine systems, rivaling the much larger Indian River Lagoon. Its watershed provides habitat for more than 2900 species, including a large number of rare, endemic and protected plants and animals. The bay has the greatest expanse of seagrass beds in the Florida panhandle. The low freshwater input system is overall in good condition, but seagrasses, oyster reefs and water quality have suffered some decline and action is needed to improve these habitats. Taking action now to improve water quality through reduction of sedimentation and nitrification is more cost effective than waiting until the waters are officially impaired. Delay will result in more aquatic habitat destruction and impact on species and a greater restoration cost.

Bay County's approach to minimize soil erosion and sedimentation delivery from unpaved road surface and roadside drainage system is by design and construction of adequately stabilized roadside drainage and stabilization of the dirt road with pervious open grade asphalt pavement. Pervious open grade pavement BMP is not a traditional surface treatment like regular asphalt surfaces where no additional stormwater conveyance is provided. Pervious open grade roads are designed with two concepts in mind: 1). Since sedimentation and nitrification reduction is the main goal, the most effective method of eliminating this is to eliminate the dirt road itself. This is done by stabilization of the dirt road with pervious open grade pavement. 2). Since the next goal is to provide adequate drainage system, the design includes engineering analysis to ensure that the roadside drainage system has adequate capacity to route stormwater without erosion.

Pervious open grade pavement captures runoff from the source into its matrix, some of which infiltrates into the base matrix and some travels to the edge of the roadway pavement and slowly discharges over sodded shoulder into the roadside conveyance system.

Emphasis will be given during design phase to allow for installation of sodded roadside shoulders and vegetated swales for the treatment and conveyance of stormwater runoff. These BMPs will allow for elimination of roadside erosion and sedimentation, reduction of nitrification, reduction of velocities of the roadway runoff, improved infiltration of the stormwater runoff through vegetation.

The proposed BMPs will allow for:

- Reduction of sediment loading and reduction of nitrification of Sweetwater Creek, upper branch of Econfinia Creek
- Improvement of water quality of Sweetwater Creek, upper branch of Econfinia Creek (Bay County's primary source of drinking water)
- Protection and increase in aquatic diversity
- Protection and restoration in aquatic habitat.

Project Effectiveness Evaluation:

The County has performed a number of similar projects in the last 20 years with great success. Since the source of the sedimentation is eliminated through the roadway stabilization and installation of roadside drainage system, it is very easy to monitor the progress. The project will be visually monitored for 12 months after the completion of construction to see if the improvements show any signs of erosion.

Cost-Effectiveness:

The proposed project is cost effective in reduction of sedimentation and reduction of nitrification by eliminating the direct source of pollutants- dirt road surface itself. This will be accomplished by stabilization of the dirt road with pervious open grade pavement and providing roadside drainage system of adequate capacity. These BMPs will allow for elimination of roadside erosion and sedimentation, reduced nitrification, and improved infiltration of the stormwater runoff through vegetation.

Pollutant Load Reductions

BMP #1 Name:

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr
EMC*	**	**	**
Pre-Project (3.4 mi of dirt road)	151,803	228	350
Post-Project (3.4 mi of stabilized road)	13906	66	274
Load Reduction	137,897	162	76
% Reduction	90.8%	71.05%	21.71%

** WMM model was used to estimate the pollution loads for this project.

There are a number of methods that can be used to assist in defining the pollution load from dirt roads such as USFWS SRI method, WMM model with EMC parameters for dirt roads, actual long term historical monitoring, etc. Like any other application, the user needs to understand the limitation of each method and choose the most applicable method to the problem at hand. In this case, the project did not fit the typical SRI approach with long steep approaches that erode to a creek crossing at the bottom low point. What we had was flatter road with intermittent outfalls. In addition, we had some documentation of a number of historical events that could provide a reality check for the empirical numbers generated by the models. Based on this, it was found that WMM model estimate even though more conservative, were more indicative of the erosion loss observed during past historical events.

Project Funding and Timeline

Description	Grant Funding	Match Funding	Number of Months To Complete Task
Data Collection	N/A (not eligible for grant funds)	In-house*	2 month
Engineering Design and Plans Preparation	N/A (not eligible for grant funds)	In-house*	12 months
Permitting	N/A (not eligible for grant funds)	In-house*	2 months
Bidding	N/A (not eligible for grant funds)	In-house*	3 months
Construction	\$894,756	\$1,342,136	5 months
Monitoring	-	In-house*	12 months

Total Number of Months for the Project: 24 months (excluding monitoring phase)

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PROJECT 4

PROJECT NAME: Continued Expansion and Sustainability of the Florida-Friendly Landscaping™ Program to Protect Water Quality From Stormwater Runoff and Nonpoint Source Pollution

PROJECT FUNDING REQUEST: \$279,463

MATCH COMMITMENT: \$1,179,956

TOTAL PROJECT COST: \$1,459,418

LEAD ORGANIZATION:

Florida Cooperative Extension Service,
University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS)

CONTACT:

Esengul Momol, Director
Florida-Friendly Landscaping™ Program
University of Florida
Environmental Horticulture Department
PO Box 110675, Gainesville, FL 32611-0675
Phone: (352) 273-452 Fax: (352) 392-1413
eam@ufl.edu

FINANCIAL COOPERATING PARTNERS: FDEP and UF/IFAS

OTHER COOPERATING PARTNERS:

The Florida-Friendly Landscaping™ (FFL) Program has grown to become a cooperative effort involving many organizations including the state's water management districts, utilities, city and county governments, the Suwannee River Partnership, the Department, Florida Nursery, Growers, and Landscape Association (FNGLA) and many other industry and civic groups, along with other UF/IFAS programs (Program for Resource Efficient Communities-PREC, Florida Master Gardener Program, Integrated Pest Management Florida, and the UF Water Institute).

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

FFL is an educational outreach program that covers the entire State of Florida.

PROJECT ABSTRACT: This project is a continuation of the FFL program, a statewide Extension outreach program run for over twenty years as a partnership between the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS), the Florida Department of Environmental Protection (FDEP) and the EPA. The program's top priority is to prevent nonpoint source pollution associated with urban landscaping and landscape maintenance, specifically by minimizing potential runoff/leaching of landscaping and turfgrass fertilizers (especially nitrogen), as well as pesticides. FFL educational outreach promotes nine principles of urban landscape design and maintenance that decrease fertilizer and pesticide use, and facilitates substantial water savings through more efficient home irrigation.

PROJECT OBJECTIVE(S): The primary focus for FFL is public education on the nine FFL principles delivered statewide through UF/IFAS Extension; and training and certification of landscaping professionals through the Green Industries Best Management Practices Program. The nine principles are:

1. Right Plant, Right Place -- promotes landscaping plant selection that matches a site's soil, light, water, and climatic conditions so that, once established, they will require little to no supplemental water, fertilizer, or pesticides.
2. Water Efficiently -- emphasizes landscape design that groups together plants with similar water needs; install zoned irrigation systems with rain shutoff devices or soil moisture sensors.
3. Fertilize Appropriately – provides UF/IFAS recommendations for proper fertilizer application rates and methodology to minimize potential nutrient runoff and leaching.
4. Mulch – promotes proper use of mulch to retain soil moisture, protect plants, and inhibit weed growth.
5. Attract Wildlife – promotes landscaping plants used for food, water, and shelter by birds, butterflies, bats, and others.
6. Manage Yard Pests Responsibly – promotes Integrated Pest Management (IPM), a strategy that helps gardeners manage pests with as few chemicals as possible.
7. Recycle Yard Waste – promotes composting of yard waste for subsequent use as a soil amendment.
8. Reduce Stormwater Runoff – promotes landscape design features such as rain gardens, berms, or swales that slow runoff from heavy rains and allow the water time to soak into the ground.
9. Protect the Waterfront – promotes a 10-ft wide “maintenance free zone” around lake, river, and stream shorelines within which no fertilizer is applied.

FFL has served Florida citizens as a nonpoint source pollution prevention and water conservation program for more than 20 years. During that time the program has evolved to reach multiple target audiences that include residential homeowners, community builders/developers/property managers, and landscaping professionals in the green industries. Effective public outreach to these diverse audiences requires multiple outreach methods.

PROJECT DESCRIPTION: Outreach methods to FFL's primary target audiences are described below:

Target Audience: Residential Homeowners

Florida already has some 20 million residents in nearly 8 million households; however, this population is projected to grow to nearly 26 million over the next two decades. Public outreach to Florida's diverse and ever growing population is likewise an ever growing challenge for the FFL program. For this reason the FFL program has a dedicated program component called the Florida Yards & Neighborhoods (FYN) program that interfaces primarily with residential homeowners or homeowners/property associations. The FFL state office staff includes a statewide FYN coordinator who coordinates with county-based Extension agents and FFL coordinators throughout the state, ensuring that programming for the FFL nine principles is delivered in a comprehensive and consistent manner. The county-based Extension agents and FFL coordinators mean that FFL is active in 47 of Florida's 67 counties. Each year, in collaboration with the statewide UF/IFAS Extension network, the FYN program distributes many thousands of printed copies of its two main publications:

1. The Florida-Friendly Landscaping™ Guide to Plant Selection & Landscape Design
(http://ffl.ifas.ufl.edu/pdf/FYN_Plant_Selection_Guide_2015.pdf)

2. The Florida Yards & Neighborhoods Handbook
(http://ffl.ifas.ufl.edu/materials/FYN_Handbook_2015_web.pdf)

The last print run for the plant selection guide was for 40,000 copies. Numerous other publications are also available online (<http://ffl.ifas.ufl.edu/homeowners/publications.htm>).

In addition, FFL works closely with the UF/IFAS Master Gardener (MG) program, which is a statewide network of nearly 4,700 volunteers organized through MG programs at the county level. MGs undergo extensive training on all aspects of Florida gardening, including comprehensive training on FFL. In turn, the MGs conduct myriad gardening workshops year around throughout Florida targeted at the landscaping needs of Florida residential homeowners. The MG program closely tracks all volunteer hours and interactions with the public. The state Master Gardener Coordinator estimates FFL-related activities - workshops, consultations, and public events - comprise an estimated 50% of the Master Gardener's volunteer efforts. Based on that estimate, for 2017, Florida Master Gardener volunteers spent 184,567 hours promoting FFL concepts and reached 190,219 Floridians. Further, with paraprofessional volunteer time valued at \$23.33 an hour (http://independentsector.org/programs/research/volunteer_time.html), the FFL extension outreach efforts of the MG volunteers during 2018 provided \$3,650,211 worth of value to Florida residents.

To facilitate statewide consistency in FFL educational outreach, the FYN state coordinator, in collaboration with the FFL team and UF/IFAS faculty advisors, recently completed an updated and revised FFL curriculum that provides consistent training in educating Extension agents about FFL practices. The curriculum update includes a new 322 page curriculum manual, *The Florida-Friendly Landscaping™ Curriculum Instructor Manual*, which provides extension professionals and FFL educators a science-based, standard training curriculum detailing the nine FFL principles. The curriculum includes ten modules, each with a lesson plan, guided learning activities, a standard PowerPoint presentation, and both a pre- and post-test. The lesson plans outline the learning objectives and activities that complement each PowerPoint presentation, while the pre- and post-tests measure knowledge gain on a county level. Educators are encouraged to use the six month follow up FFL Behavior Change Survey. This survey measures behavior change as a result of attending FFL training and is designed to help develop impact reporting. Details on how to participate in this survey can be found on the FFL FYN Educators Log in Site <http://ffl.ifas.ufl.edu/educators/index.htm> (password protected link). This standard training curriculum facilitates a science-based, consistent message for presenting the FFL principles statewide.

Target Audience: Builders/Developers/Property Managers:

This past year has seen a dramatic increase in construction and development. As Florida's population continues to grow and more new master-planned residential land development projects are launched the FFL Builder & Developer (B&D) program is more important than ever. Decisions associated with these large scale projects will significantly and directly impact the availability and quality of Florida's water resources, which in turn will determine the resilience and sustainability of Florida's urban, agricultural, and natural systems. Making more resource-efficient design, construction, and management choices in residential landscapes offers the potential to significantly and measurably conserve and improve the quality of Florida's water resources.

The goal of the FYN program for builders and developers is to develop, implement and evaluate new and existing UF/IFAS programs that reduce consumptive use of water, improve water quality, and protect and conserve natural resources. FYN programs cultivate professional partnerships with builders, developers and other professionals such as land planners, community developers, home builders, landscape architects, government officials, engineers, community association managers, realtors, environmental consultants, urban planners and, utility representatives.

The B&D program encourages environmentally sensitive land planning and low impact development techniques. By collaborating with professional and trade organizations, including the Florida water management districts, Florida Green Building Coalition, Florida Irrigation Society, the B&D program encourages environmentally sensitive land planning and low impact development techniques.

The B&D program provides model code development documents including the following publications:

- FFL Model Covenants, Conditions and Restrictions for New and Existing Community Associations
- A list of considerations for FFL guidelines for architectural review boards
- Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes
- FFL Model Landscape Maintenance Contract

Target Audience: Green Industry Professionals

The Green Industries Best Management Practices (GI-BMP) Program is a major component of the overall FFL program. The GI-BMP program targets all landscape professionals within Florida who apply fertilizer commercially as a landscaping business owner or landscaping crew member. In Florida, all such persons must have a Limited Urban Commercial Fertilizer Applicator's License from the Florida Department of Agriculture. To get this license, a green industry professional must first complete the UF/IFAS GI-BMP training and pass a comprehensive certification exam.

GI-BMP training is offered year around throughout Florida through UF/IFAS Extension and affiliated partners. GI-BMP training consists of six modules covering all aspects of the FFL nine principles, but with a special emphasis on proper fertilizer application.

The six GI-BMP training modules are:

1. Introduction
2. Best Management Practices for Design and Installation of Landscapes
3. Irrigation Best Management Practices
4. Mulching, Mowing, and Pruning
5. Fertilization
6. Pest Control

GI-BMP training is delivered through multiple outreach methods including a traditional classroom setting with an in-person instructor, an online course, and a DVD-based course. In-person classes are offered in English, Spanish and Haitian Creole. The online and DVD-based courses are offered in English and Spanish. Statewide, there are some 250 active GI-BMP instructors comprised of UF/IFAS Extension agents and green industry professionals.

In-person training requires a full day in the classroom. The online and DVD-based courses are self-paced, but include the full training contents of the classroom course. During 2017, 156 in-person training classes (19 in Spanish, 137 in English) were held at numerous venues and had a total attendance of 3,117, with 2,224 passing the exam and receiving their GI-BMP certification. (Not all persons who take the in-person course take the certification exam.) An additional 1,514 persons were certified through the online option and 532 through the DVD-based course. All persons earning their GI-BMP certification are eligible to apply for their Limited Urban Commercial Fertilizer Applicator's License from the Florida Department of Agriculture. Since the program's inception in 2006 (and through December 2017), 1,893 in-person GI-BMP classes have been held and (counting also the online and DVD courses) 54,069 persons have taken the GI-BMP training.

EFFECTIVENESS: The FDEP TMDL program recognizes an active FYN program within a county or municipality as an effective project component when developing nonpoint source load reduction alternatives for inclusion in BMAPs for impaired waters. For example, when calculating nitrogen load reductions for impaired waters, an active FYN program allows up to 3% of the starting nitrogen load to be credited as nitrogen removed towards meeting the TMDL nitrogen loading goal.

PROJECT BUDGET:

The grant will fund eight full time salaried positions, 2 or more OPS positions (1.5 FTE), along with the associated costs, such as expenses, supplies and travel, required to carry out the activities described in the above task. The overall project funding amount is the same as previous years, with a smaller funding request to 319 and a larger portion paid out of the State DEP funds.

PROJECT GOALS:

Goal: Educate the public and industry through outreach and training.
(a) Action: Increase the use and understanding of Florida-friendly Landscaping™ (FFL) principles.
(b) Action: Educate green industry professionals about BMPs.

FFL	Grant	Match
Watershed	\$ 279,463	\$ 1,179,956
Total	\$ 279,463	\$ 1,179,956

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PROJECT 5

PROJECT NAME: Convair Cove Stormwater LID & Living Shoreline

ENTITY/SPONSOR NAME: City of Cocoa Beach Stormwater Utility

PROJECT FUNDING REQUEST AMOUNT: \$292,598

MATCH COMMITMENT AMOUNT: \$163,902

TOTAL COST: \$436,500

CONTACT INFORMATION:

Name: Joanie Regan, Stormwater Utility Manager

Street Address: 1600 Minutemen Causeway

City, State, Zip: Cocoa Beach, FL 32931

Telephone: 321.868.3292

Email: jregan@cityofcocoabeach.com

PROJECT LOCATION:

Geographic Location of Project (e.g. city, county, street address): McNabb Parkway/Cove Park, Cocoa Beach, Brevard County (within road rights-of-way, asphalt removal – Low Impact

Development (LID) installation) Stormwater LID

Size of Project Impact (area needed to build project): 7,400 square feet

Size of Area Being Treated: 22.6 acres

Living Shoreline:

Size of Project Impact (area needed to build project): approximately 300 linear feet

Latitude (decimal degrees): 28.324374 N

Longitude (decimal degrees): 80.616380 W

PROJECT WATERSHED CHARACTERISTICS:

Adopted BMAP: Indian River Lagoon (IRL) BMAP, Banana River Lagoon (BRL) BMAP

Identify if this project contributes to pollutant reductions specified in the Water Quality Restoration Plan(s): Yes

i. If yes, briefly describe the nonpoint source issues or pollutant reductions specified in the Water Quality Restoration Plan(s) that the project is addressing.

This project reduces MS4 stormwater runoff volume and associated nutrient loading to the Banana River Lagoon between the Pineda Causeway and the SR520 Causeway – BRL B segment within the IRL-BMAP for the Banana River Lagoon, specifically this project will address TN and TP TMDL Required Reductions specified on page 27 and 28. The Banana River Lagoon (BRL-BMAP) is where most of the seagrass loss occurred, as well as where most of the algae blooms and fish kills happened. The project's stormwater LID BMPs and Living Shoreline concepts can be applied elsewhere in the City to mitigate the stormwater impact from our residential neighborhoods along the lagoon in the west portion of the City. These LID BMPs will be monitored to understand the nutrient and overall storm runoff

volume removal – as well as the denitrification performance of the BMPs and BAM (nutrient sorption media), which protects groundwater that mixes with lagoon.

1. Provide the name of the waterbody(s) that this project addresses:

Indian River Lagoon/Banana River Lagoon segment BRL B

2. Provide the WBID number(s) for the waterbody segment(s) that this project addresses: 3057A

3. List the parameter(s) the waterbody is impaired (i.e., not achieving standards) for those WBIDs that this project addresses: Nutrients: nitrogen, phosphorus

4. Does the project treat water that discharges directly into an impaired WBID(s)? Yes; 3057A

TMDL Name that project is addressing, if applicable:

Indian River Lagoon Basin: Banana River Lagoon, Total Nitrogen (11,346 LBS/YR), Total Phosphorus (2,359.5 LBS/YR)

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

LAND USE:

Land Use	Acres	%
Residential Low Density (1100)	12.42	99.0
Recreational (1800)	0.13	1.0
Land Use Totals (Acreage and %)	12.55	100

DETAILED PROJECT DESCRIPTION:

The project consists of two sub-basins, each with approximately the same acreage of low density residential homes, which currently drain via valley curb to canals directly on the Banana River Lagoon. This stormwater LID project intercepts direct storm runoff through a BMP treatment train of PaveDrain permeable paver system (~ 80LF x 40 LF (3200 SF)), with associated pre-treatment sumps to capture debris/sediment prior to permeable paver system. The PaveDrain system has built in runoff storage volume in the pavers themselves as well as storage in the supporting rock (interstitial spacing) and a layer of “milk crate” type of rain tank (R-Tank). This system maximizes the runoff storage volume while providing vehicular rated pavement with visual charm. The excess storm runoff from the permeable paver system flows either directly (heavy rains) or sub-grade through a Bio-Active Media (BAM) nutrient sorption barrier wall into a native landscaped rain garden (40LF x 40LF (1600 SF)) with a control structure that prevents upstream flooding. Multiple benefits include nutrient removal from BAM and plant uptake, community green space, community understanding of the value and function of green infrastructure in reducing pollutants and improving lagoon with applicability to driveways, decks and yards – and the integration of roadway/stormwater amenities on a space-limited barrier island. This system greatly reduces both the storm runoff volume – and nutrient/pollutant loading to the receiving water while also protecting the barrier island’s surficial aquifer.

The final component of the system is installation of a living shoreline along the City park and roadway vertical seawall. This design is still somewhat conceptual but is being developed with the Brevard Zoo (oyster component) and the MRC (Marine Resources Council – spartina/mangrove component). There are a few market products that may work or possibly an in-house design – basically a floating substrate (wood/HDPE plastic) tethered to the vertical seawall, which houses the oysters and mangroves. Coquina rock platforms in a few areas could provide spartina and mangrove platforms. This Living Shoreline provide Green Infrastructure along an existing hardened seawall – providing a testing location as well as an educational site for this type of urban/residential canal-front living. Once established, these nutrient reduction filtration natural resources will exponentially increase their nutrient reducing capability, as well as provide seed for establishment elsewhere with the Thousand Islands and suitable shoreline. There is a strong enthusiasm for establishing shellfish and mangroves as a means of ambient lagoon nutrient removal. The IRL lost its shellfish population/industry from overharvesting in the 1980s and never recovered the loss.

Objective:

This project is 100% LID and green infrastructure, which reduces storm runoff volume and pollutant loading and is the most sustainable and reliable way to restore waterways and protect them into the future. Both the Stormwater LID and Living Shoreline project is included in Brevard County's Save Our Indian River Lagoon Project Plan (SOIRLPP), will be submitted for inclusion into the IRL-BMAP Banana River Lagoon project list for 2018, and be made part of the overall watershed restoration and protection documentation and annual reporting.

COST EFFECTIVENESS:

Stormwater LID is cost effective because it is a long-term sustainable approach to water quality improvement/protection – not just an end-of-pipe filter that is marginally effective on gross/non-soluble pollutants and ineffective for soluble pollutants such as dissolved nitrogen/phosphorus. This project involves a treatment train of LID BMPs including permeable pavers, underground rain tanks and rain gardens – with a BAM nutrient sorption barrier wall to mitigate nitrogen to both the lagoon and the groundwater. The Living Shoreline component of the project includes mangroves, spartina and oysters, which both remove nutrients from estuarine waters and restores these critical natural resources. The permeable pavers will be PaveDrain, which are interlocking rapid filtration pavers suitable for vehicular traffic – with built in storage volume below the paver. There is no sand in the PaveDrain system so clogging is minimized and infiltration is rapid and effective. There is additional storm runoff storage in the supporting rock layers beneath the PaveDrain and the “milk grate” type of rain tank (R-Tank) in the bottom permeable paver system layer. A pre-sump will be installed to capture any sand/debris from the upstream basin, which is easily maintained by the City's storm vacuum, which is currently used for stormdrains and pollution control devices. Storm runoff that is not captured in the permeable pavement system will flow to a native landscaped rain garden of substantial capacity, with a control structure to protect from upstream flooding in heavy rain events. Between the permeable pavement and the rain garden will be a BAM (nutrient sorption) barrier wall, which will allow excess storm runoff to be denitrified and will also treat the permeable pavement system retained volume as it moves downstream through the BAM wall. This LID approach treats the full volume of storm runoff – keeping freshwater from being lost to salt – nourishing the barrier islands shallow aquifer. This system is an integral part of the street – providing enhanced infrastructure as well as much needed green infrastructure and tree canopy.

Operations and Maintenance (O&M) costs become part of the City's public roadway budget – routine streetsweeping, stormdrain cleaning and grounds maintenance – all which are routine line items in the City's annual budget. The Living Shoreline will provide a test site for this innovative vertical seawall design – and test the success mangrove, spartina and oyster establishment within the low-energy bulkhead lines within the City. There has been a lot of discussion and enthusiasm for creation of living shorelines, particularly along vertical hard seawall and this will provide a great monitoring site with educational opportunities about softening these hard systems. Operational costs of the living shoreline are minimal and should actually provide protection of the vertical seawall. This design template can be used throughout the City's residential areas to minimize storm runoff to lagoon while providing beauty, much needed green areas and restoration of shoreline habitat and fisheries. Overall this project is cost effective in the long-term approach to reversing the 1960 curb and gutter drainage system and operationally cost effective by using the City's current SOP for maintenance.

POLLUTANT LOAD REDUCTIONS:

BMP #1 : Permeable Pavers/PaveDrain System

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
EMC*	-	-	-	-	-	-	-
Pre-Project	-	7.06	66.64	-	-	-	-
Post-Project	-	1.83	18.1	-	-	-	-
Load Reduction	-	5.23	51.53	-	-	-	-
% Reduction	-	77.4	74.1	-	-	-	-

BMP #2: Rain Gardens/Native Landscape Bioswale

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
EMC*	-	-	-	-	-	-	-
Pre-Project	-	1.83	18.1	-	-	-	-
Post-Project	-	1.67	11.2	-	-	-	-
Load Reduction	-	0.16	6.88	-	-	-	-
% Reduction	-	8.7	38.0	-	-	-	-

BMP #3: Living Shoreline – Oysters, Mangroves, Spartina

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
EMC*	-	-	-	-	-	-	-
Pre-Project	-	-	-	-	-	-	-
Post-Project	-	-	-	-	-	-	-
Load Reduction	-	32	96	-	-	-	-
% Reduction	-	N/A	N/A	-	-	-	-

TOTALS – only using BMPs #1 and #2 (Living Shoreline is ambient estuarine nutrient reduction)

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
Pre-Project	-	7.06	69.6	-	-	-	-
Post-Project	-	1.67	11.2	-	-	-	-
Load Reduction	-	5.39	58.4	-	-	-	-
% Reduction	-	76.3	83.9	-	-	-	-

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Design, Permitting	\$0	\$25,500	09/01/2018 to 06/30/2019
BMP Construction	\$237,598	\$87,402	06/01/2019 to 06/01/2020
Education (<i>319 only</i>)	\$15,000	\$0	05/01/2019 to 09/30/2020 +
Monitoring (<i>319 only</i>)	\$0	\$70,000	07/01/2019 to 06/30/2021
Final Report	\$0	\$1000	09/30/2019 to 06/30/2021 Dependent on Monitoring Results Inclusion into Final Report

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PROJECT 6

PROJECT NAME: Bayou Chico Stormwater Retrofit Project Phase II

ENTITY/SPONSOR NAME: Escambia County Board of County Commissioners

PROJECT FUNDING REQUEST AMOUNT: \$660,000

MATCH COMMITMENT AMOUNT: \$440,000

TOTAL COST: \$1,100,000

CONTACT INFORMATION:

Name: Taylor “Chips” Kirschenfeld, Senior Scientist & Natural Resources Management Division Manager

Street Address: 223 Palafox Place

City, State, Zip: Pensacola, FL 32502

Telephone: (850) 595-4988

Email: jtkirsche@myescambia.com

PROJECT LOCATION:

Geographic Location of Project (e.g. city, county, street address): Project is located in southcentral Escambia County along Jones Creek north of Highway 98 between Decatur Avenue and Fairfield Drive

Size of Project Impact (area needed to build project): 1.6 acres **Size of Area Being Treated:** 121.1 acres

Latitude (decimal degrees): 30.38637°

Longitude (decimal degrees): -87.30425°

PROJECT WATERSHED CHARACTERISTICS:

Adopted BMAP: Bayou Chico Fecal Coliform BMAP

Identify if this project contributes to pollutant reductions specified in the Water Quality Restoration Plan(s): Yes

- i. If yes, briefly describe the nonpoint source issues or pollutant reductions specified in the Water Quality Restoration Plan(s) that the project is addressing.

The BMAP identifies urban stormwater runoff and failing septic tanks found within older neighborhoods as two likely sources of elevated fecal bacteria. The project will provide new stormwater treatment facilities. The larger overall project will eliminate septic tanks from an older residential neighborhood.

1. Provide the name of the waterbody(s) that this project addresses:

Project directly addresses Jones Creek and Bayou Chico. Downstream receiving waters also include Bayou Chico, Bayou Chico Beach, Sanders Beach, and Pensacola Bay.

2. Provide the WBID number(s) for the waterbody segment(s) that this project addresses.

Project directly addresses WBIDs 846A and 846. Downstream receiving waters also include 846CB, 848DA, and 548D.

3. List the parameter(s) the waterbody is impaired (i.e., not achieving standards) for those WBIDs that this project addresses:
Jones Creek (846A): fecal coliform bacteria, dissolved oxygen, and biology. Bayou Chico (846): nutrients (chlorophyll-a), enterococci bacteria, fecal coliform bacteria.
4. Does the project treat water that discharges directly into an impaired WBID(s)? Yes
Project discharges directly in to Jones Creek (846A). Downstream receiving waters also include Bayou Chico (846), Bayou Chico Beach (846CB), Sanders Beach (848DA), and Pensacola Bay (548D).
5. TMDL Name that project is addressing, if applicable: Bayou Chico Fecal Coliform, Bayou Chico Nutrients
If addressing a TMDL, identify the pollution reductions and parameters specified in the TMDL: 61% reduction in fecal coliform loading, 30% reduction in both nitrogen and phosphorous loading

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

Is the project expected to be located in or primarily benefit a financially disadvantaged community? (e.g., Rural Economic Development Initiative)?

Yes

If yes, name the community: Warrington. The Warrington Community Redevelopment Plan (2010) indicates that 21% of households located within the community are below the poverty level compared to 11.8% countywide. The plan also indicates the Warrington median household income is 28% lower than the corresponding countywide statistic. The Index Number for Warrington is 86.94.

LAND USE:

Land Use	Acres	%
Residential Medium Density (1200)	108.30	89.40
Commercial and Services (1400)	2.36	2.00
Institutional (1700)	5.00	4.10
Upland Forests (4000)	5.24	4.30
Wetlands (6000)	0.17	0.10
Land Use Totals (Acreage and %)	121.1	100

DETAILED PROJECT DESCRIPTION:

Overall phase II project will install new stormwater collection/conveyance, stormwater treatment, and sanitary sewer infrastructure for a 121.1 acre residential area located along Jones Creek upstream of Bayou Chico. Project area extends north of Highway 98 from Decatur Avenue west to Fairfield Drive. Area includes approximately 250 residential dwellings currently serviced by septic tanks. Existing

stormwater conveyance is comprised of a network of unimproved open ditches. Ditches flow north toward Jones Creek. Existing treatment provided is minimal. This project will install the stormwater treatment systems for the overall all phase II project. Drainage from Rentz Avenue, Calhoun Avenue, Breman Avenue and associated cross streets will be redirected into a constructed linear wet retention pond (treatment system “A”). Basin “A” is 71.2 acres or 59% of the overall project area. Basin “B” is 49.9 acres or 41% of the overall project area.

Project will include two separate treatment train systems:

System “A” will incorporate a bio-sorption activated media filter installed the length of the linear pond system. The wet pond will have littoral planting along the banks to provide nutrient uptake, cycling, and sequestration. Limited space available for construction within the existing neighborhood determined the shape of the wet pond. Expected residence time in treatment pond “A” is 42 hours. Low impact design elements will be incorporated into the project to maximize pollutant removal efficiencies, specifically to address an existing nutrient TMDL. A bio-sorption active media filter will be incorporated into the discharge system of the pond. Drainage from Winton Avenue, Colbert Avenue, and associated cross streets will be redirected through a hydrodynamic separator to remove total suspended solids, sediment, and floatables. Effluent from the separator will travel through a bio-sorption active media upflow filter prior to discharge into a separate wet retention pond.

System “B” will incorporate a hydrodynamic separator to provide pretreatment, a bio-sorption activated media upflow filter, and a wet pond with littoral planting along the banks to provide nutrient uptake, cycling, and sequestration. Expected residence time in treatment pond “B” is 80 hours. Effluent from both Basin “A” and “B” will be further routed through a series of wet retention ponds downstream currently under construction as under phase I of the overall project. These water quality improvement projects will reduce nonpoint source pollution in Jones Creek and Bayou Chico. Incorporating LID elements will allow Escambia County to maximize pollutant removal efficiencies within the limited space available for the retrofit project. BAM filters will result in an anticipated long-term saving compared to other alternatives by significantly lowering in maintenance and replacement costs.

Objective:

Jones Creek and Bayou Chico are impaired for fecal bacteria and excess nutrients. Adopted TMDLs identify reductions in non-point source loading of 61% for bacteria and 30% for both total nitrogen and total phosphorous. Urban stormwater runoff is a notable source/conveyance of both fecal bacteria and nutrients. Treatment of urban stormwater runoff will reduce nonpoint source pollutant loading to Jones Creek and Bayou Chico. Project design will incorporate innovative low impact design elements to maximize removal efficiencies. Reductions in pollutant loading will help local stakeholders attain TMDL and BMAP goals.

COST EFFECTIVENESS:

Joint stormwater / sewer projects are cost effective to install. Infrastructure installation costs (i.e. mobilization, dewatering, excavation, maintenance of traffic, etc.) can be shared by both utilities. LID projects can also be cost effective. The use of biosorption activated media (BAM) filters allows for pollutant removal efficiencies to be achieved within a less substantial footprint reducing overall cost. BAM filters are low maintenance with long life expectancies reducing maintenance and eventual replacement costs.

POLLUTANT LOAD REDUCTIONS:

BMP #1 : Basin “A” Treatment Train

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
EMC*	-	77.2	552	-	-	-	-
Pre-Project	-	77.2	552	-	-	-	-
Post-Project	-	27.2	172.1	-	-	-	-
Load Reduction	-	60	379.6	-	-	-	-
% Reduction	-	77.7	68.8	-	-	-	-

BMP #1 – Additional EMCs

Land Use	TSS	TP (mg/L)	TN (mg/L)	Sediment	BOD	Other	Other
SINGLE FAMILY	-	0.327	2.070	-	-	-	-
LOW INTENSITY COMMERCIAL	-	0.188	1.13	-	-	-	-
INSTITUTIONAL	-	0.188	1.13	-	-	-	-

BMP #2 : Basin “B” Treatment Train

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
EMC*	-	61.1	386.7	-	-	-	-
Pre-Project	-	61.1	386.7	-	-	-	-
Post-Project	-	11	84.6	-	-	-	-
Load Reduction	-	50.1	302.1	-	-	-	-
% Reduction	-	82	78.1	-	-	-	-

TOTALS

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
Pre-Project	-	138.3	938.7	-	-	-	-
Post-Project	-	38.2	256.7	-	-	-	-
Load Reduction	-	110.1	681.7	-	-	-	-
% Reduction	-	79.6	72.6	-	-	-	-

What are the estimated residence times of any ponds, swales, etc.

Associated Task Number	Type of Structure (pond, swale, etc.)	Estimated Residence Time (in days)
Basin “A” Treatment Pond	Pond	1.75
Basin “B” Treatment Pond	Pond	3.33

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Design, Permitting	\$0	\$ 0	01/01/2019 to 02/28/2019
BMP Construction	\$ 610,000	\$440,000	07/01/2019 to 06/30/2020
Monitoring (<i>319 only</i>)	\$ 50,000	\$0	01/01/2019 to 10/31/2021
Final Report	\$ 0	\$0	7/01/2019 to 12/31/202

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PROJECT 7

PROJECT NAME: Pine Lake Preserve Re-Hydration

PROJECT FUNDING REQUEST AMOUNT: \$ 580,000

MATCH COMMITMENT AMOUNT: \$370,000

TOTAL COST: \$950,000

ENTITY/SPONSOR NAME: City of Bonita Springs

CONTACT INFORMATION: Name: Matt Feeney Street Address: 9101 Bonita Beach Road City, State, Zip: Bonita Springs, FL 34135 Telephone: (239) 949-6246 Email: matt.feeney@cityofbonitasprings.org

PROJECT LOCATION:

Geographic Location of Project (e.g. city, county, street address): 27100 Kent Road, Bonita Springs, FL, 34135

Size of Project Impact (area needed to build project): 173 acres

Size of Area Being Treated: 314.57 acres

Latitude (decimal degrees): 26.341068 N

Longitude (decimal degrees): 81.742684 W

PROJECT WATERSHED CHARACTERISTICS:

Adopted BMAP: Everglades West Coast Basin Management Action Plan

b. Identify if this project contributes to pollutant reductions specified in the Water Quality Restoration Plan(s): Yes

i. If yes, briefly describe the nonpoint source issues or pollutant reductions specified in the Water Quality Restoration Plan(s) that the project is addressing.

Page 62, Section 11.3 – MS4 Projects to Reduce TN Loading identifies Pine Lake Preserve as Project LC-2 in Table 32 as a target project to assist in reducing pollutants. This project is projected to achieve 850 pounds of nitrogen reduction by moving water across the landscape creating a “sheet flow” condition that allows for evapotranspiration, infiltration and plant nutrient uptake. In addition, flows will be allowed to attenuate in the project’s lakes, slow delivery of nitrogen downstream and providing time for littoral plants to uptake nitrogen. Finally, delivery is further slowed as surface water will be directed to flow through a meandering natural stream system.

1. Provide the name of the waterbody(s) that this project addresses: Imperial River
2. WBID number(s) for the waterbody segment(s) that this project addresses: WBID 3258E
3. List the parameter(s) the waterbody is impaired (i.e., not achieving standards) for those WBIDs that this project addresses: Imperial River, TN
4. Does the project treat water that discharges directly into an impaired WBID(s)?
Yes; WBID 3258E

5. TMDL Name that project is addressing, if applicable: Active TMDL for Nitrogen

If addressing a TMDL, identify the pollution reductions and parameters specified in the TMDL:

The City of Bonita Springs is required to achieve 9.903 pounds of nitrogen reduction in the Imperial River's Freshwater Basin by the year 2027, additional basin stakeholders are committed to additional reductions of 50,221 pounds, within the same timeframe, to achieve a TMDL of .74 mg/L for nitrogen in the basin.

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

LAND USE:

Land Use	Acres	%
Residential Low Density (1100)	12.66	4.02
Residential Medium Density (1200)	0.76	0.24
Residential High Density (1300)	10.48	3.33
Institutional (1700)	5.69	1.81
Open Land (1900)	4.55	1.45
Agriculture (2000)	5.22	1.66
Upland Non-Forested (3000)	42.84	13.62
Upland Forests (4000)	50.82	16.16
Water (5000)	35.61	11.32
Wetlands (6000)	145.94	46.39
Land Use Totals (Acreage and %)	314.57	100

DETAILED PROJECT DESCRIPTION:

This project is intended to be a hydrological restoration project to re-hydrate and re-establish hydraulic connectivity between the Imperial River and its historic watershed to the east (Corkscrew Regional Ecosystem Watershed [CREW]). Flows will be redirected south onto the property from an existing stormwater ditch on the property's northern boundary. Once onsite, storm water will be directed via overland sheet flow into two existing shallow ponds. The ponds will be modified to outfall to another overland sheet flow condition ultimately converging into an existing severed tributary of the Imperial River. The project is estimated to reduce nitrogen loading in the Imperial River BMAP for 850 pounds/year.

The City will construct modest earthwork and grading on the northern (first) quarter of the project. Overland flowways through an existing fire maintenance roadway will run east to west across bisecting the property and forming the project's northern quarter boundary. The flowways will allow surface water to flow from north to south into two existing shallow lakes on the property. Two earthen berms will be constructed and oriented north to south on the project's eastern and western boundaries.

These berms will terminate at the internal east/west fire break road and serve to keep surface water sheet flows on the project site. In the northern quarter of the project, surface water will be allowed to spread out across the landscape and infiltrate into the ground, providing surficial aquifer recharge. Nutrient uptake will be achieved through marsh plantings as well as the infiltration process.

In the middle (second) portion of the project construction consists of building two sheet pile and rock cascades along portions of the southern perimeters of two existing shallow lakes. In addition, littoral aquatic plant species, such as spike rush, alligator flag and pickerel weed will be planted in the lakes littoral zones. Stormwater directed to the two lakes will attenuate suspended solids in the lake environment and nutrient uptake will be achieved through evapotranspiration and through the littoral plantings. Dissolved oxygen levels will be increased by directing lake overflows through the sheet pile/rip rap cascades at each lakes' southern perimeter.

The third quarter of the project consists of minor grading to construct a marsh flow-way, to include plantings that will direct flows from the two lakes to a dry streambed that was once a primary tributary of the Imperial River. The tributary was severed from the river during a channelization event that occurred in 1962, Nutrient uptake will be achieved through infiltration into the groundwater supply and via the marsh plantings.

The final quarter of the project consists of degrading the Imperial River's western bank in the immediate vicinity of its severed tributary and constructing a rock cascade to allow a portion of the Imperial River flows to flow into the dry streambed. This hydraulic reconnection of the Imperial River will increase dissolved oxygen levels via flow over the rock cascade and achieve nutrient uptake by slowing down the Imperial River flows by passing them through a natural stream habitat that has not been channelized.

Objective:

The project is projected to achieve 850 pounds of nitrogen reduction by moving water across the landscape creating sheet flow conditions allowing for evapotranspiration, infiltration and plant nutrient uptake. In addition, flows will be allowed to attenuate in the project's lakes, slowing delivery of nitrogen downstream and providing time for littoral plants to uptake nitrogen. Delivery is further slowed as surface water will be directed to flow through a meandering natural stream system.

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POLLUTANT LOAD REDUCTIONS:

BMP #1 : Wet Detention

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
Pre-Project	-			-	-	-	-
Post-Project	-			-	-	-	-
Load Reduction	-			-	-	-	-
% Reduction	-	60.9	32.3	-	-	-	-

BMP #2: Dry Detention

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
Pre-Project	-			-	-	-	-
Post-Project	-			-	-	-	-
Load Reduction	-			-	-	-	-
% Reduction	-	77	77	-	-	-	-

BMP #3: Littoral Plantings

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
Pre-Project	-	-	-	-	-	-	-
Post-Project	-	-	-	-	-	-	-
Load Reduction	-			-	-	-	-
% Reduction	-	2.3	2.3	-	-	-	-

TOTALS

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.	Sediment lbs./yr.	BOD lbs./yr.	Other lbs./yr.	Other lbs./yr.
Pre-Project	-	73.8	1083	-	-	-	-
Post-Project	-	12.7	234	-	-	-	-
Load Reduction	-	61.1	849	-	-	-	-
% Reduction	-	83	78	-	-	-	-

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Design, Permitting	\$0	\$0	Completed
BMP Construction	\$580,000	\$380,000	6 months
Education (319 only)	\$0	\$0	Ongoing
Monitoring (319 only)	\$0	\$0	Ongoing
Final Report	\$0	\$0	30 days following grant expiration

PROJECT 8

PROJECT NAME: Ripple Stormwater Water Quality Retrofit, Phase II

PROJECT FUNDING REQUEST AMOUNT: \$ 315,285

MATCH COMMITMENT AMOUNT: \$97,000

TOTAL COST: \$412,285

ENTITY/SPONSOR NAME: Martin County

CONTACT INFORMATION:

Name: Susan Kores

Street Address: 2401 SE Monterey Road

City, State, Zip: Stuart, FL 34996

Telephone: 772-320-3095

Email: skores@martin.fl.us

PROJECT LOCATION:

Geographic Location of Project (e.g. city, county, street address): SW 28th and SW 29th Streets, Palm City, FL 34990

Size of Project Impact (area needed to build project): 3 acres

Size of Area Being Treated: 20.24 acres

Latitude (decimal degrees): 27.170263

Longitude (decimal degrees): -80.266024

PROJECT WATERSHED CHARACTERISTICS:

Adopted BMAP: St. Lucie River and Estuary Basin

- a. Identify if this project contributes to pollutant reductions specified in the Water Quality Restoration Plan(s): Yes
 - i. If yes, briefly describe the nonpoint source issues or pollutant reductions specified in the Water Quality Restoration Plan(s) that the project is addressing. Include plan page numbers where applicable.

The BMAP identifies controlling nonpoint source pollution as essential for reducing nutrient loads. The BMAP encourages local governments to implement effective projects that will minimize pollutant runoff from municipal operations and property. The proposed stormwater improvements retain water where it falls and help Martin County decrease nitrogen and phosphorus pollution. Once funded, the *Ripple* project will be listed in the next subsequent update of the Progress Report for the St. Lucie River Estuary BMAP, as it will achieve load reductions for parameters of concern specified in the BMAP.
2. Provide the name of the waterbody(s) that this project addresses: South Fork St. Lucie River and Estuary Basin
3. Provide the WBID number(s) for the waterbody segment(s) that this project addresses. 3210A

4. List the parameter(s) the waterbody is impaired for that this project addresses.
Total Nitrogen (TN) & Total Phosphorus (TP)
5. Does the project treat water that discharges directly into an impaired WBID(s)?
Yes; South Fork St. Lucie River and Estuary Basin – 3210A
 - a. TMDL Report Name that project is addressing, if applicable: Nutrient and Dissolved Oxygen TMDL for the St. Lucie Basin

LAND USE:

Land Use	Acres	%
Residential Medium Density (1200)	20.24	100%
Land Use Totals (Acreage and %)	20.24	100

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

DETAILED PROJECT DESCRIPTION:

The project is a stormwater treatment project to serve an existing neighborhood using empty lots owned by Martin County. The project also includes eco-art and educational components. Four separate locations will be utilized to provide stormwater treatment in an area that currently has none. The proposed Ripple project will use attractive landscapes, native species and green infrastructure to treat rainwater where it falls. These low-impact development practices offer significant environmental benefits over conventional stormwater management (where runoff is shunted quickly into detention basins or directly to streams). By holding water on-site, the Ripple project reduces the amount of runoff generated during a rainstorm, alleviating flooding, erosion and habitat damage. In addition, the project will filter out pollutants such as oil, bacteria, sediment and nutrients as the collected water seeps through vegetation and soil.

FDEP is funding Phase I construction with a State grant agreement. The Phase II scope of work is separate and apart from Phase I. It does not duplicate any Phase I construction. Phase II activities will enable Martin County to complete the Ripple project and achieve the proposed load reductions.

Site 1 will restore 0.99 acres of poorly functioning wetland. This will include the removal of exotics, planting of native wetland species, and the construction of a shell rock trail with viewing areas throughout the site. Rock filter dikes will be incorporated into the trail at various locations to facilitate the flow of water into the site. Runoff from Site 1 is directed under SW 28th street to Site 2.

Site 2 is 0.79 acres of open space that currently has a wet swale through the center of the property. A bioswale will be constructed generally along the route of the existing channel with a dry detention storage area along the bioswale banks and a continuation of the trail system from Site 1. Runoff from Site 2 is directed to the east through existing storm sewers along SW 29th Street to Site 3.

The Site 3 parcel is 0.52 acres and bounded to its north by SW 29th Street and to its east by SW Cornell Avenue. It is classified almost entirely as Brazilian Pepper and Melaleuca. A deep wet detention pond is proposed with regraded pretreatment swales along the south side of SW 29th Street and the west side of SW Cornell Avenue. The wet detention area is located near the downstream area of the project and will provide a large residence time for pollutant removal for 97% of the project area. The swales will have structures to discharge into the pond on Site 3. A new outfall from the wet detention is proposed to be constructed in right-of-way along SW 29th Street to Site 4 and the St. Lucie River.

Near the outfall to the St. Lucie River, a small dry detention or retention area (Site 4) is proposed to provide water quality treatment to the immediate area of 0.66 acres, prior to discharge to the river.

Some key aspects of the project include:

- Utilizes vacant County property to provide pollutant removal and stormwater quality in an older area constructed prior to stormwater regulations
- Use of a variety of stormwater treatment methods including wetland restoration, dry detention and retention, bioswales, and wet detention
- The wet detention area with a large residence time and high pollutant removal efficiency is located at the downstream end of the project
- The educational component of the project serves as a teaching tool for the surrounding community

Martin County has partnered with award-winning eco-artist Lucy Keshavarz of Art & Culture Group, Inc. to work with residents and develop a unique plan for the project. The Ripple project has already gathered feedback from residents. Community members provided input through charrettes and other events on how the three parcels and waterfront could be transformed (see https://www.youtube.com/watch?time_continue=1476&v=IDjVYr9Vz-I for video of a creative placemaking workshop). This engagement ensures that neighbors feel connected with the reimagined space and that proposed improvements reflect both the history of the area and its connection with the St. Lucie River.

Objective:

The primary objective of this project is to capture and treat runoff from an estimated 20.24-acre area and provide water quality benefits by reducing nutrient loads of TP, TN, and TSS to the St. Lucie Estuary, a nutrient-impaired water body with an adopted TMDL and BMAP. Utilizing the St. Lucie Basin BMAP nutrient loading model, the estimated annual pre-project loads are 184.12 lbs./yr of TN and 29.09 lbs./yr of TP. Based upon the proposed stormwater improvements, the annual load reductions for TN and TP equate to 62 lbs./yr and 21 lbs./yr, respectively.

COST EFFECTIVENESS:

Martin County's Ripple project (a top priority within the County's Stormwater Needs Assessment report) includes green infrastructure approaches that will help to minimize pollutant loads to St. Lucie River. The Stormwater Needs Assessment report identifies potential future water quality projects and estimates load reductions for each project in order to guide the County in the decision-making process to meet the TMDL/BMAP requirements.

The primary objective of this project is to capture and treat runoff from an estimated 20.24-acre area and provide water quality benefits by reducing nutrient loads of Total Phosphorus (TP), Total Nitrogen (TN), and Total Suspended Solids (TSS) to the St. Lucie Estuary, a nutrient-impaired water body with an adopted TMDL and BMAP. Utilizing the St. Lucie Basin BMAP nutrient loading model, the estimated annual pre-project loads are 184.12 lbs./yr of TN and 29.09 lbs./yr of TP. Based upon the proposed stormwater improvements, the annual load reductions for TN and TP equate to 62 lbs./yr and 21 lbs./yr, respectively. These results will only be fully achieved with the completion of Phase II construction activities.

Martin County will conduct a water quality monitoring program to evaluate the performance efficiency and effectiveness of the Ripple project. The monitoring plan will specify the sampling locations by GPS, sampling instruments, and parameters to be sampled. The parameters shall include, but are not limited to: TN (lbs/yr), TP (lbs/yr), TSS (lbs/yr), pH, temperature, specific conductivity, alkalinity, dissolved oxygen, oxidation-reduction potential, turbidity, color, rainfall, evapotranspiration and flow. A QAPP will be developed with and submitted for approval to the FDEP.

POLLUTANT LOAD REDUCTIONS:

Total - Name: Ripple Stormwater Project

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Lead lbs/yr	Zinc lbs/yr
EMC*	37.5	0.327	2.07	-	7.90	0.004	0.062
Pre-Project	3,336	29	184	-	703	0.36	5.52
Post-Project	40	8	122	-	11	0.01	0.02
Load Reduction	3,296	21	62	-	692	0.35	5.50
% Reduction	99%	72%	34%	-	98%	99.6%	99.7%

- b. What are the estimated residence times of any ponds, swales, etc. Add rows as needed.

Type of Structure (pond, swale, etc.)	Estimated Residence Time (in days)
Restored wetland	<1
Bioswale with detention storage	<1
Deep-cell wet detention pond	14
Dry detention or retention	<1

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Design, Permitting	\$0	\$0	
BMP Construction	\$315,285	\$97,000	9/1/2019 to 2/28/2021
Education (319 only)	\$	\$	
Monitoring (319 only)	\$	\$	
Final Report	\$	\$	

PROJECT 9

PROJECT NAME: McCarty Ranch Water Quality, Restoration and Storage Project – Area 4

PROJECT FUNDING REQUEST AMOUNT: \$718,950

MATCH COMMITMENT AMOUNT: \$578,635

TOTAL COST: \$1,297,585

ENTITY/SPONSOR NAME: City of Port St. Lucie

CONTACT INFORMATION:

Name: John Eason, P.E.

Street Address: 900 SE Ogden Lane

City, State, Zip: Port St. Lucie, FL 34983

Telephone: 772-873-6487

Email: jeason@cityofpsl.com

PROJECT LOCATION:

Geographic Location of Project (e.g. city, county, street address):

12525 Range Line Road, St. Lucie County

Size of Project Impact (area needed to build project): 304 acres

Size of Area Being Treated: Retention basin will be used to treat up to 2 percent of water from the C-23 Canal Basin which has a watershed area of 112,677 acres.

Latitude (decimal degrees): 27.214461

Longitude (decimal degrees): -80.523008

PROJECT WATERSHED CHARACTERISTICS:

Adopted BMAP: St. Lucie River and Estuary Basin Management Action Plan (BMAP).

Identify if this project contributes to pollutant reductions specified in the Water Quality Restoration Plan(s): Yes

- i. If yes, briefly describe the nonpoint source issues or pollutant reductions specified in the Water Quality Restoration Plan(s) that the project is addressing.

The St. Lucie River and Estuary Basin Management Action Plan (BMAP) addresses the intent of the BMAP in Section 1.3.3 – Plan Purpose and Scope and in Section 1.3.4 – BMAP Approach. The BMAP also includes a Summary of Sources in TMDL (Section 3.1). Allocations and Required Reductions (Section 4.6) and Allocation by Source (Section 4.7) are included. The City of Port St. Lucie's total required BMAP reductions for TN is 53,101 lbs/year and 23,430 lbs/yr for TP. The goal of the first 5-year iteration of the BMAP is to achieve 30% of the required reductions. The first 5-year reduction goals for the City of Port St. Lucie are 5,930 lbs/yr of TN and 7,029 lbs/yr of TP and have been achieved.

1. Provide the name of the waterbody(s) that this project addresses:

The project will address the TMDL / BMAP requirements of the St. Lucie River and Estuary Basin, more specifically, the North Fork of the St. Lucie River.

2. Provide the WBID number(s) for the waterbody segment(s) that this project addresses. WBIDs 3194/3194B (North Fork of the St. Lucie River) and 3200 (C-23 Canal).

3. Parameter(s) the waterbody is impaired for that this project addresses: TN, TP, BOD.

4. Does the project treat water that discharges directly into an impaired WBID(s)?
No- This project will not have any discharge.

- i. If no, then describe how the project contributes to reductions of the parameters impairing the WBID(s).
 - a. The project will include incorporation of Best Management Practices using retention basins/ infiltration basins to capture a portion of the flow in the C-23 Canal. Water will be pumped from the C-23 Canal into the infiltration basins, where it will remain until it is infiltrated directly to the groundwater. Discharge back to the C-23 Canal will only occur during emergency situations such as extreme rain events.

5. TMDL Report Name that project is addressing, if applicable: St. Lucie Basin Nutrient and Dissolved Oxygen TMDL

- i. If addressing a TMDL, identify the pollution reductions and parameters specified in the TMDL: Total Nitrogen (TN), Total Phosphorus (TP) and Dissolved Oxygen.

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

LAND USE:

Land Use	Acres	%
Residential Low Density (1100)	1909	1.69
Residential Medium Density (1200)	304	0.27
Commercial and Services (1400)	9	0.01
Industrial (1500)	48	0.04
Extractive (1600)	412	0.37
Institutional (1700)	662	0.59
Recreational (1800)	255	0.23
Open Land (1900)	10	0.01
Agriculture (2000)	84160	74.69
Upland Non-Forested (3000)	1604	1.42
Upland Forests (4000)	2724	2.42
Water (5000)	1811	1.61
Wetlands (6000)	16279	14.45
Barren Land (7000)	1108	0.98
Transportation, Communication, and Utilities (8000)	1382	1.23
Land Use Totals (Acreage and %)	112,677	100

DETAILED PROJECT DESCRIPTION:

The objective of this project is to improve the water quality of the North Fork of the St. Lucie River by reducing the pollutant load discharging into the River from the C-23 Canal, which captures runoff from agricultural and urban areas. The project will include incorporation of Best Management Practices using retention basins / infiltration basins to capture a portion of the flow in the C-23 Canal. Water will be pumped from the C-23 Canal into the infiltration basins, where it will remain until it is infiltrated directly to the groundwater or returned to the C-23 Canal with emergency overflow outlets during extreme rain events.

The project proposes to pump nutrient laden water from the impaired C-23 Canal into infiltration basins, where it will be stored until it percolates into the groundwater or evaporates. This project is the fourth of six or more phases which will be constructed on a fallow citrus grove and other areas of McCarty Ranch. Area 4 consists of a 304-acre site that will divert flow from the C-23 Canal by pumping into a shallow 4-foot water-depth retention basin constructed with above-ground berms and a static volume of approximately 1,216 acre-feet. Upon completion of Area 4 it is projected that more than approximately 4,377 acre-feet of water could be stored annually. Monitoring and reporting the data for total nitrogen, total phosphorus, BOD and total suspended solids will provide verification of the quantities of pollutants that have been removed.

Ultimately, when all six phases of the project have been constructed it is estimated that there could be a total treatment capacity of 12,170 acre-feet annually of water pumped from the C-23 Canal. Upon completion of all 6 phases of this project, it is estimated that approximately 23,810 lbs. of nitrogen and 9,091 lbs. of phosphorus will be removed annually from the downstream system.

To promote public awareness of this project and its contribution to improving water quality in the St. Lucie River and Estuary, information will be presented at public meetings and released to news agencies, environmental groups and state and federal governmental members. It is the intention that these discussions will educate the public about the environmental problems and generate support for further projects to be implemented.

Objective:

The objective of this project is to improve the water quality of the North Fork of the St. Lucie River by reducing the total nitrogen, total phosphorus, BOD and total suspended solids in the C-23 Canal. This will be accomplished by pumping water from the canal to a 1,216-acre-foot storage reservoir (retention basin) where it will allow nutrients to be reduced by 50 to 75 percent of their influent values using ground water recharge. The annual reduction in nutrients for Area 4 is estimated to remove 2,401 lbs/yr for total phosphorus, 6,288 lbs/yr for total nitrogen, 17,737 lbs/yr for BOD, and 63,347 lbs/yr for total suspended solids. At the final implementation of all the future phases of this project there could be annual reduction in nutrients of up to 9,091 lbs/yr for total phosphorus, 23,810 lbs/yr for total nitrogen, 67,159 lbs/yr for BOD, and 239,855 lbs/yr for total suspended solids.

This project would also contribute to the reduction in flow from the C-23 Canal by impounding the water and providing infiltration to the ground water. Area 4 of this project could reduce the C-23 discharges by as much as two percent, and at built-out up to 21 percent.

POLLUTANT LOAD REDUCTIONS:**BMP#1 – Area 4**

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr
EMC*	10	0.379	1,489	0	2.8
Pre-Project	84463	3,201	12577	0	23,650
Post-Project	63	2,401	6288	0	17,73
Load Reduction	21116	800	6288	0	5,912
% Reduction	75	75	50	0	75

- a. What are the estimated residence times of any ponds, swales, etc. Add rows as needed.

Type of Structure (pond, swale, etc.)	Estimated Residence Time (in days)
Area 4	280 days

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Design, Permitting	\$0	\$180,000	01/01/2020 to 06/31/2020
BMP Construction	\$718,950	\$20,000	11/01/2020 to 11/01/2021
Education <i>(319 only)</i>	\$	\$	03/01/2020 to 07/31/2020
Monitoring <i>(319 only)</i>	\$	\$	12/30/2021 to 6/30/2022
Final Report	\$	\$	6/30/2022 to 09/30/2022

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PROJECT 10

PROJECT NAME: FDEP Education Project

PROJECT FUNDING REQUEST: \$ 208,283

MATCH COMMITMENT: \$ 144,452

TOTAL PROJECT COST: \$352,735

LEAD ORGANIZATION: FDEP Watershed Restoration Section

CONTACT INFORMATION:

NAME: Emily Forinash

Street Address: 3900 Commonwealth Blvd. Rm 432, Douglas Building

City, State, Zip Code: Tallahassee, FL 32399

Tel: 850-245-2944

Email: Emily.Forinash@FloridaDEP.gov

LOCATIONS: All adopted Basin Management Action Plan (BMAP) areas.

Project Overview:

The Department will be conducting education activities and/or providing funds for nonpoint source education to local governments in the Basin Management Action Plan (BMAP) areas. State conducted education activities may include ongoing efforts such as the creation and distribution of nonpoint source pollution education tool kits will allow the state, counties, and cities to have a more unified message moving forward and to not “reinvent the wheel”. These State conducted education activities will focus on stakeholder education within the Basin Management Action Plan (BMAP) areas and Reasonable Assurance Plan (RAP) areas, with information that may be applicable statewide. The Department will use existing contractual long-term marketing contracts to implement their efforts.

The Department will solicit local governments for projects in the adopted BMAPs, then review and select the top projects submitted in a competitive grant review process. Projects will be focused on education and outreach pertaining to the reduction of nonpoint source pollutants in the adopted BMAP areas.

Methods of outreach may include but are not limited to:

- Public Service Announcements
- Development, publication and distribution of BMP manuals (including LID manuals)
- Training through workshops, field days, and classes
- Creating and providing information through publications such as flyers and notices
- Website development or revision
- Coordinating with area schools to provide classroom education and nonpoint curriculum opportunities

Subjects on Nonpoint Source Pollution Education and Outreach may include but are not limited to:

- Preventing nonpoint source pollution
- OSTDS maintenance and pollution prevention

- Low Impact Development projects
- Activities identified in the BMAPs and targeting BMAP issues
- Florida Friendly Landscaping

Project Effectiveness Monitoring will be incorporated into each project.

A Final Report will be provided summarizing the projects completed and the results of the effectiveness monitoring.

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

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PROJECT 11

PROJECT NAME: Landscaping for Watershed Protection Pilot Project

PROJECT FUNDING REQUEST AMOUNT: \$25,000

MATCH COMMITMENT AMOUNT: \$35,000

TOTAL PROJECT COST: \$60,000

ENTITY/SPONSOR NAME: Pinellas County BOCC

CONTACT INFORMATION:

Name: Alexandra Mauer

Email: amauer@co.pinellas.fl.us

PROJECT LOCATION:

Geographic Location of Project: McKay Creek Watershed, Pinellas County

Size of Project Impact (area needed to build project): 2.5 Acres

Size of Area Being Treated: 10

Latitude (decimal degrees): 27.883931

Longitude (decimal degrees): -82.807868

PROJECT WATERSHED CHARACTERISTICS:

Adopted Reasonable Assurance Plan (RAP): Tampa Bay RAP

- b. Identify if this project contributes to pollutant reductions specified in the Water Quality Restoration Plan(s): Yes; *Chlorophyll-a, dissolved oxygen, biology*
1. Provide the name of the waterbody(s) that this project addresses:
McKay Creek. This WBID is not directly within the boundaries of the Tampa Bay RAP but direct affects the RAP.
2. Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
WBIDs 1633 and 1633B
3. List the parameter(s) the waterbody is impaired for that this project addresses.
Chlorophyll-a, dissolved oxygen, biology
4. Does the project treat water that discharges directly into an impaired WBID(s)?: **Yes**
If yes, identify the **WBID(s)** that the treated water directly discharges into: **1633 and 1633B**
5. TMDL Report Name that project is addressing, if applicable:
Dissolved Oxygen and Nutrient TMDL for McKay Creek Tidal Segment, WBID 1633, FDEP August 2015; TMDL for Dissolved Oxygen and Nutrients in McKay Creek (WBID 1633B), EPA July 2013

If addressing a TMDL, identify the pollution reductions and parameters specified in the TMDL: WBID 1633: Total nitrogen 45% reduction, 5-day biochemical oxygen demand 45% reduction WBID 1633B: Total nitrogen 78% reduction, total phosphorus 85% reduction

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

DETAILED PROJECT DESCRIPTION:

Pinellas County is the most densely populated county in Florida, with over 3,000 people per square mile, and approximately 98 percent built-out. This results in significant urban stormwater runoff into the County's surface water, from stormwater ponds to lakes and rivers to estuaries and bays. At this time, 33 watersheds in Pinellas County are impaired for nutrients and/or dissolved oxygen (DO), and there are 23 nutrient/DO TMDLs. The majority of Pinellas County residents live in high density residential areas and have traditional lawns consisting mostly of turf grass. Traditional lawns rely heavily on irrigation and fertilizer and require a lot of maintenance. Much of the county has access to reclaimed water for irrigation, which is high in nutrients, so over-irrigation has the potential to contribute significantly to water quality impairments in the form of runoff that enters waterbodies.

The ability to implement large-scale nutrient reduction programs in such a densely populated area can be difficult. This program will focus on adaptive, small-scale retrofits to encourage landscaping best management practices for reducing fertilizers and water use. PCDEM is proposing a cash rebate pilot program to homeowners who replace turf grass, which requires high-volume irrigation and fertilizer and produces yard waste, with Florida Friendly Landscapes (FFL). This program is modeled on the TurfSWAP program which Alachua County implemented very successfully. A rebate of \$0.50/ft² will be offered to property owners who replace irrigated lawns with non-irrigated FFL, while \$0.35/ft² will be offered for replacing irrigated landscapes with FFL and correctly installed micro-irrigation. Rebates up to 50% will be available for residential properties, with no single rebate to exceed \$2,000. The existing high volume irrigation must be removed from the retrofitted areas to qualify for the rebate. Landscaping retrofits will be completed by landscapers and irrigation professionals experienced with FFL and accredited by the Pinellas County Landscape BMP Certification Program.

The County will implement this pilot project in the McKay Creek watershed, a nutrient-impaired basin with two nutrient TMDLs which is currently the County's top priority watershed for a TMDL Implementation Plan. The pilot program will reduce the amount of traditional turf grass in the watershed, which will result in reduced fertilizer usage, irrigation needs, and grass clippings. FFL vegetation also tends to have deeper roots and is more effective at holding and filtering nutrients from runoff than turf.

PCDEM will actively promote the pilot program through a variety of mediums and via a partnership with the Pinellas County UF/IFAS Extension. The County Extension offers Florida Friendly Landscaping (FFL) classes to citizens approximately once a week. Class topics rotate weekly and include Introduction to FFL, Designing a FFL, Managing a FFL, and other FFL relevant topics. Information about the pilot program will be presented and distributed at the Extension classes. Pre- and post-class surveys about FFL, in addition to questions about participation in the program, will be part of these classes. Information will also be shared on the County's website and Facebook page, through Pinellas Utilities, at neighborhood meetings, and through tabling at large public events. Small yard signs will be distributed to participants to display in their retrofitted landscapes to further promote the program and to enhance social perspective on FFL.

The project match will come partially from the property owners who retrofit their landscapes. Since implementation costs vary depending on the project, it is difficult to estimate the total match provided by the property owners. The rebate will cover up to 50% of the retrofit costs, with a maximum of \$2,000 per household. PCDEM staff will contribute in-kind match to promote and oversee the program, and UF/IFAS Extension will provide educational classes in support of the program.

Objective:

By replacing turf with low-maintenance, resource-efficient landscapes that thrive without supplemental inputs of irrigation and chemicals, the pollutant load entering Pinellas County waters will be reduced. Based on the BMPTRAINS model, replacing traditional landscape with native vegetation could reduce nitrogen loading by 40% and phosphorus loading by over 70% in the project area. Total reductions vary depending on the treatment type used at each site. The education component of this project will reach beyond the McKay Creek watershed, and the demonstration of FFL may prompt additional implementation apart from the grant funding. This project will be included in the TMDL Implementation Plan that is being drafted for McKay Creek and will advance the progress toward meeting the TMDLs. McKay Creek flows into Clearwater Harbor, currently an unimpaired waterbody, so improving water quality in McKay will help protect this important resource.

COST EFFECTIVENESS:

Metrics that will be tracked to assess the success of this project include: square feet/acres converted from traditional landscapes to Florida Native and Florida Friendly landscapes, square feet/acres converted from irrigated to non-irrigated landscapes, square feet/acres converted from traditional irrigation systems to micro-irrigation systems, number of microirrigation systems installed, total costs of implementation, number of homeowners participating in the program, and the number of homeowners attending a Florida-Friendly Landscaping (FFL) class where the project is described. Additionally, pre- and postparticipation surveys will be conducted with all homeowner participants and at all events where program presentations are given. This will allow for the program to determine the effectiveness of the message, identify barriers to implementation, and indicate potential changes in homeowner landscape management practices.

POLLUTANT LOAD REDUCTIONS:

This proposal is for a **nonstructural BMP** project, such as demonstrations, or effectiveness Evaluation: Yes

This pilot project will demonstrate conversion of traditional lawns to FFL in a targeted area. Based on the BMPTRAINS model, replacing traditional landscape with native vegetation could reduce nitrogen loading by 40% and phosphorus loading by over 70%. Total reductions vary depending on the treatment type used at each site. Installing FFL vegetation, especially as buffers at the edge of lawns, will enhance the amount of stormwater captured and filtered and prevent further nutrient loading into the storm drain system. Additionally, fewer grass clippings will be produced and potentially enter the stormwater system. A large amount of education and outreach will be part of this project, and surveys will be used to measure the effectiveness of the messaging. The rebate offered will help promote additional implementation.

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe
Education and Outreach	\$0.00	\$10,000	48 Months
Implementation	\$25,000	\$25,000	36 Months

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PROJECT 12

PROJECT NAME: Seminole County Waterway Protection – Fertilizer Education for Retail Stores and Applicators

PROJECT FUNDING REQUEST AMOUNT: \$90,000

MATCH COMMITMENT AMOUNT: \$60,000

TOTAL PROJECT AMOUNT: \$150,000

ENTITY/SPONSOR NAME: Seminole County Government

CONTACT INFORMATION:

Name: George Woodring

Street Address: Resource Management Department, 1101 East 1st Street

City, State, Zip: Sanford, FL 32771

Telephone: 407-665-7168

Email: gwoodring@seminolecountyfl.gov

Fax: 407-665-5286

PROJECT LOCATION:

Geographic Location of Project (e.g. city, county, street address): Seminole County, FL

Size of Project Impact (area needed to build project):

Size of Area Being Treated:

Latitude (decimal degrees): 81.21° W

Longitude (decimal degrees): 28.71° N

PROJECT WATERSHED CHARACTERISTICS:

1. Provide the name of the waterbody(s) that this project addresses:

We will be addressing and educating citizens, retail stores, and industries in all three of the following adopted BMAP areas in Seminole County:

- a) Middle St. Johns River Basin for Lake Harney, Lake Monroe, Middle St. Johns River, and Smith Canal.
- b) Lake Jesup Basin
- c) Middle St. Johns River Basin for Wekiva River, Rock Springs Run, and Little Wekiva Canal

2. Provide the WBID number(s) for the waterbody segment(s) that this project addresses: N/A

3. List the parameter(s) the waterbody is impaired for that this project addresses.

- a) Middle St. Johns River Basin for Lake Harney, Lake Monroe, Middle St. Johns River, and Smith Canal BMAP for the Implementation of TMDLs for Nutrients and Dissolved Oxygen.
- b) Lake Jesup Basin BMAP for the Implementation of TMDLs for Nutrients
- c) Middle St. Johns River Basin for Wekiva River, Rock Springs Run, and Little Wekiva Canal BMAP for the Implementation of TMDLS for Nutrients

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

PROJECT OVERVIEW:

Seminole County (413,000 residents, northeast of Orlando, FL) has recognized critical threats to water quality, including nonpoint source pollution, by participating in three BMAPs in the Middle St. Johns River Basin. The goal of the proposed program is to reduce nonpoint source (NPS) pollution by engaging the Seminole County community, particularly local retail stores and commercial applicators within the BMAP areas, with educational outreach efforts on appropriate fertilizer use. Seminole County Public Works, Watershed Management Division (SCWMD), anticipates that the development of literature, posters, banners, training videos, and training workshops will maximize waterway stewardship and improve water quality in BMAP areas, thereby meeting TMDL restoration goals. This project would expand upon educational outreach efforts targeted to residents funded by a FY 2017 Section 319(h) Nonpoint Source (NPS) Education Grant.

Educational Audience – Educational efforts on NPS pollution and appropriate fertilizer use will be focused on stores distributing fertilizer, those producing/distributing fertilizer, and commercial fertilizer applicators. Stores will include local plant nurseries, big-box or supercenters/megastores in the County (e.g. Walmart, Home Depot, Tractor Supply), and hardware stores in the County. Local fertilizer producers (e.g. Sunniland, Rite Green) will also receive educational materials, as will commercial applicators. All efforts to reach commercial applicators will be complementary to the UF/IFAS Green Industries Best Management Practice (GI-BMP) program, https://ffl.ifas.ufl.edu/professionals/BMP_overview.htm). A full list of shops and nurseries will be compiled at the beginning of the project.

Literature, Posters, Banners - A suite of literature on appropriate fertilizer use will be created to highlight the most important points of the Fertilizer Ordinance in layman's terms for the aforementioned local businesses and commercial applicators. These materials will be developed to explain the hazards of nutrient pollution in our waterways, emphasize the critical role of healthy waterways in public health, flood control, and wildlife protection, and encourage citizens to become waterway stewards. Brochures / "take-a-flyer" and posters will be designed for local retail businesses to post or offer near fertilizer products and at registers; these materials will help customers make responsible decisions in purchasing fertilizers, fertilizer spreaders, and related accessories/tools. These materials will be created for County-wide distribution, and other materials will be tailored to particular water quality challenges within individual BMAP communities. Materials will be produced in English and Spanish, as appropriate, to reach a greater percentage of the culturally diverse citizens of Seminole County. Stationary pull-up banners will be positioned in all participating local retail stores/nurseries to share simple, straightforward messages with customers about the Fertilizer Ordinance, and choosing the most compliant products.

Training Videos - A set of short videos will be created for local retail stores and commercial applicator businesses to use in the education of their employees. As with the literature, these videos will highlight the most important points of the Fertilizer Ordinance, but with different versions of the videos tailored to each type of business. These visual tools will be developed to briefly explain the hazards of nutrient pollution in our waterways, and how this relates to the health and wellbeing of business patrons and their community. The videos will help employees show patrons their compliant products, and give quick tips on proper application.

Training Workshops - Workshops will be offered to local retail and commercial applicator businesses to provide an in-person format for familiarizing owners, managers, and their employees with the key points of the Fertilizer Ordinance. These training sessions can be held for individual nurseries or retail

stores, and will equip employees to explain the Ordinance to customers, discuss proper application, and answer customer questions. The sessions will also highlight topics relevant to each audience, such as the cost savings of using slow release nitrogen fertilizer for patrons of retail stores. The mobile-friendly Fertilizer Calculator (developed with the previous NPS grant) will be highlighted as a free tool that employees can share with customers. Existing literature can also be distributed at these sessions (lawncare specialist checklist, approved product lists (<http://www.seminolecountyfl.gov/core/fileparse.php/4092/urlt/Summertime-Product-List-by-Manufacture.pdf>), and EDIS publications about summer blends and turf health as it relates to iron, potassium, and other nutrients). Training Workshops will further provide a venue for interactive group discussions and brain-storming sessions for companies to discuss the best way to approach sales and customer service related to fertilizer use. These arenas for fertilizer use education are expected to transform positive community peer pressure into environmental protection. Certificates of completion will be provided to attendees to reaffirm their personal investment in their training and education.

Additional Outreach - Seminole County will encourage public participation in this educational project through outreach at local retail stores/nurseries, a poster billboard message, and social media/website content. SCWMD staff, FFL staff, and volunteers will have outreach booths at local retail stores/nurseries on a monthly basis over the course of the project, where they will interact with customers and distribute literature. The stationary poster billboard will reach commuters and travelers with messages focused on fertilizer education for retail stores and commercial applicators. Social media channels (FFL: Facebook, SERV: Facebook, Twitter, Instagram, LinkedIn) will be used to promote opportunities for training workshops and outreach events at local retail stores/nurseries, and condensed versions of all new educational messages for local retail stores and commercial applicators. Educational literature will be adapted for posting on Seminole County's dedicated fertilizer webpage, other County webpages (SCWMD, FFL, SERV), and the webpages of Seminole County cities (Altamonte Springs, Lake Mary, Longwood, Oviedo, Sanford, Winter Springs). Nextdoor, a free, private social network for neighborhoods, will also be used to post event opportunities, educational messages, and County website links; these posts can be targeted to particular neighborhoods (BMAP areas), and can be posted County-wide.

Addressing BMAP issues - This fertilizer-focused educational outreach project addresses BMAP issues by encouraging local retail stores to share information with their customers, and to promote products in compliance with the Fertilizer Ordinance. It also encourages commercial applicators to use permitted products and compliant practices to reduce nutrient pollution from the properties they manage, which should reduce TP and TN in BMAP waterways. These reductions will help to meet TMDLs as set by FDEP for the Lake Jesup Basin, the Middle St Johns River Basin, and the Wekiva Basin. Seminole County regularly collects water quality samples in the three BMAP areas, and will quantify and compute the nutrient load before and after educational efforts. It is anticipated that the citizens' increased understanding about appropriate application of fertilizer will reduce TN and TP in BMAP areas due to their decreased use of fertilizer containing phosphorus or nitrogen, and reduced application of fertilizer near shorelines and during times of peak run-off.

We anticipate that these educational outreach tools will be effective, and of significant interest and importance to the community. We expect that reduced TN and TP from better fertilizer management practices will help Seminole County to comply with TMDL regulations. Subsequent increases in water quality will benefit human health through increased safety of drinkable, swimmable water, and food resources, boost ecotourism, and protect wildlife. Overall, this multifaceted approach at

addressing water quality challenges through education will build upon our efforts to educate residents (previous NPS grant), and will be part of an ongoing effort to reach all of Seminole County with critical messages concerning NPS pollution reduction. This project, in its entirety, will be presented at various state conferences, all of which provide a statewide forum for disseminating data and information.

COST EFFECTIVENESS:

This new fertilizer education program will maximize County resources through staff expertise (Watershed Management Division, Community Relations/SGTV, Graphic Design), volunteer time (Master Gardeners) and the utilization of existing and free resources (Seminole Education, Restoration, and Volunteer (SERV) Program and FFL Program social media). The anticipated reduction in local waterway nutrient load through behavioral changes will improve water quality and limit or possibly prevent future remediation and restoration efforts. It is much more cost effective to prevent nutrients from entering the water than it is to remove them from the water (a cost savings to the County). Surveys will be utilized to determine the effectiveness of Training Workshops.

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Education and Outreach	\$90,000	\$60,000	Upon Execution to 4/1/2023

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PROJECT 13

PROJECT NAME: Project FLOW: Future Leaders of Water Quality; Enhancing Local Water Quality Through Environmental Stewardship

PROJECT FUNDING REQUEST AMOUNT: \$ 72,715

MATCH COMMITMENT AMOUNT: \$ 49,603

TOTAL PROJECT COST: \$122,318

ENTITY/SPONSOR NAME: Florida Gulf Coast University

CONTACT INFORMATION:

Name: Molly Nation, PhD

Street Address: 10501 FGCU Blvd. South

City, State, Zip: Fort Myers, FL 33965

Telephone: (239) 590-7242

Email: mnation@fgcu.edu

PROJECT LOCATION: Lee County, Florida

PROJECT WATERSHED CHARACTERISTICS:

1. Provide the name of the waterbody(s) that this project addresses:
Local School Campus Detention and Retention Ponds
2. Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
Lee County Public Schools are within the Caloosahatchee Tidal Basin and The Everglades West Coast

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

PROJECT OVERVIEW:

Local water quality issues necessitate a more focused, specific effort to build awareness and knowledge to ensure clean and safe water is locally available. Lee County is the fastest growing county in the State of Florida with a population increase of 3.6% projected for 2018 and about 1,000 new settlers per day. Initiatives to mitigate human impacts are imperative. Water quality and water flow ultimately determine how many people in Southwest Florida have access to clean and safe water. Water quality in Southwest Florida is vitally important to the health of the residents and ecosystems, and also has a large impact on the local economy.

With over 10,000 artificially constructed detention ponds between Lee and Collier Counties, these water bodies are a critical component in managing stormwater runoff in developed areas. Poor pond management practices may result in the ponds becoming a source of downstream pollutants. Increasing local community awareness of the role of detention ponds and enhancing their functioning as green infrastructure to filter water through littoral edge management is a key part of this place-based initiative. Further, by increasing the filtering of the pond, students connect their personal mitigative actions to that of scientists working to restore the historical flow of the Everglades to

improve the quality of water regionally and ensure continued availability. Teaching students to mitigate human impact through environmental stewardship of informed choices and responsible action is necessary for the future of our local watershed. Through participation in this project, students and teachers will engage in service-learning, an experientially based methodology which combines classroom pedagogy with community action. Students will learn and develop through active outdoor learning and participation in thoughtfully organized service experiences that meet actual community.

Project FLOW addresses local community need for human impact mitigative strategies, environmental literacy, by working with local middle school teachers and students to increase environmental literacy about quality of water within the watershed in Southwest Florida, from their own detention ponds to the neighboring Everglades. Project FLOW will take place within the classroom and at the school detention ponds, curricula will examine the role of state-mandated detention ponds to manage stormwater runoff. A focus of the project will be on point and non-point source pollution sources including regulating fertilizer application and littoral edge planting (Lee County Fertilizer Ordinance 08-08).

Mitigation of nonpoint source pollution is only one factor affecting water quality in Lee County. Project FLOW prepares local students to become informed, active community members equipped with knowledge, scientific skills, and engineering practices to help mitigate anthropogenic impacts and improve water quality. The curriculum addresses the following educational priorities; training of educators about environmental and conservation issues, solutions and stewardship which encourage interest in water quality and ensuring clean and safe water continuity that support aquatic ecosystems, recreational, economic and subsistence activities. Project FLOW targets middle and secondary school teachers and students, who are studying human impact on water quality and flow, Florida Next Generation Standard SC.7.E.6.6 and SC. 17.16 and 17.8 and 17.9 Environmental Impacts due to human activity and water quality and changing the flow of water.

Teachers will be recruited from Lee County, where minority enrollment is over 50% (majority Hispanic), targeting priority will be given to teachers representing a variety of district school zones and to those schools that are identified Title 1. Site selection criteria includes campuses from all three Lee District school zones with preference within those zones given to schools serving economically disadvantaged students through Title I funding. District wide 59% students grade 6-12 identify as minorities, 35% of middle schools in Lee County qualify for Title 1 federal funding and 9% of students district wide have limited English proficiency.

Project FLOW is a continuation of a pilot study that took place within the classroom of three Lee County middle school teachers in the 2017-2018 school year, and an addition of one high school classroom in during the 2018-2019 school year. The pilot study was conducted at Varsity Lakes Middle School and Lehigh Senior high School. Initial data from the pilot study suggests the implementation of the curriculum increased environmental literacy among the student population, and students scored higher on the summative examination than students who did not experience the curriculum. Survey data collected suggested the experience working outdoors with their schools' detention pond promoted behavior that benefits the environment at the school surrounding and local community. Lastly, students felt motivated to take personal responsibility of their watershed through civic engagement and environmental stewardship.

Project FLOW promotes educational and local agencies collaboration to increase awareness and knowledge about water quality among a diverse group of students throughout Lee County. Within the

context of a place-based setting, measures of water quality are investigated as students work to improve the quality of their campus' detention pond and identify ways to limit non-point source pollutants.

Through increasing awareness of human impacts and teaching best practices, students are better prepared to:

- Make informed decisions and communicate effectively about water quality.
- Take personal action to mitigate impact on water resources.
- Maintain currently existing and develop green infrastructure within their own detention ponds and for future community development.
- Recognize the value of restoring natural flow in the Everglades altered by urbanization

Project FLOW will focus on promoting place-based environmental and conservation stewardship among students using their school's detention pond as the site of the investigation. The curriculum development will promote personal knowledge and action in efforts to mitigate human impact on water resources, through increasing awareness and knowledge about water quality development of personal understandings and applying laboratory skills as students measure the physical and chemical properties tied to water quality. Students will also engage in hands-on laboratory activities, fieldwork, innovative green infrastructure development, and civic engagement through this project, which encourages student-led action and citizen science initiatives. The implementation of the curriculum includes student-led initiatives that will improve the quality of water entering the campus detention pond as runoff, including identifying, reducing and/or removing point and nonpoint source pollutants.

Students will evaluate and improve the quality of water through:

- Learning about the function of the detention pond to manage stormwater runoff including non-point pollution sources,
- Testing the chemical and physical properties of water in their classroom laboratory by various measures of water quality, including pH, the relationship between temperature and dissolved oxygen (DO) levels, presence of algae, and turbidity. Using data available to them from university scientists, students can compare findings with regional detention ponds to compile comparative longevity laboratory reports.
- Participation in engineering practices to enhancing the function of the pond with green infrastructure.
- Environmental stewardship by planting native littoral edge vegetation to their detention pond (phytoremediation)
- Building civic engagement that can impact the larger local communities and the health of their own ponds as well as Everglades restoration.
- Identifying personal actions that impact water quality and developing mitigation strategies for these actions.

COST EFFECTIVENESS:

To examine the usability and determine the effectiveness of the instructional materials and strategies, student surveys, and assessments will be created and administered electronically. Surveys will measure students' willingness to take mitigative actions to reduce the human impact on the watershed. Assessments will measure students' understanding of local water quality issues, include point and nonpoint-source pollutants and their impact on water quality. It is estimated that over 1,000 students

will be reached the first year as a result of this implementation, therefore the cost per student is around \$72/pp for the first year. As teachers across the county continue to teach the curriculum, tens of thousands of students will be reached over a short time; making this project highly cost effective for reaching a very large audience over a relatively short period of time.

Project Funding and Timeline:

Description	Grant Funding	Match Funding	Estimated Timeframe to Complete Task
Education and Outreach	\$72,715	\$49,603	08/01/2020 to 06/30/2022